

1 CHAPTER

POPULATION AND THE MACROECONOMY



POPULATION AND THE MACROECONOMY

POPULATION PROFILE OF THE STATE

According to the Census of India 2011, the population of Kerala was 33,406,061, or 2.76 per cent of India's population. Of the States total population, 48 per cent population are males and 52 per cent are females.

The decadal growth rate of Kerala's population was 4.9 per cent, the lowest among Indian States. Among the districts of the State, Malappuram has the highest growth rate (13.4 per cent), and Pathanamthitta has the lowest growth rate (-3.0 per cent). Idukki also has a negative growth rate (-1.8 per cent). The growth rate of population is lower in six southern districts (Idukki, Kottayam, Alappuzha, Kollam, Pathanamthitta and Thiruvananthapuram) than in other districts of the State.

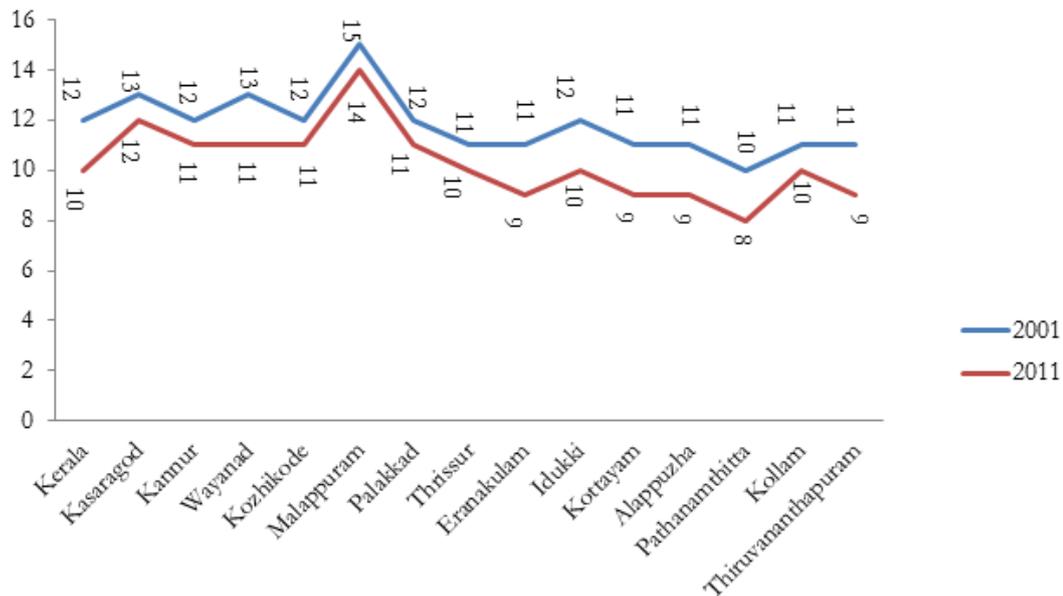
Child Population

The child population (0-6 years) in Kerala shows a declining trend. Census data shows an absolute decline in the child population in the State. Kerala's total child population in 2011 was 3,472,955 and 3,793,146 in 2001 census data. The population

of children in the age group 0-6 years in Kerala was 12 per cent at the Census of 2001 and 10 per cent at the Census of 2011 (The corresponding figure for India in 2011 was 13 per cent). **Figure 1.1** presents a picture of child population in the districts of Kerala in 2001 and 2011. The highest proportion of child population was in Malappuram district and lowest proportion was in Pathanamthitta district. The decreasing trend is seen in all districts of the State. The southern districts of Kerala show 2 per cent decline except Kollam which has a decline of 1 per cent in the proportion of child population, while the northern districts in Kerala show 1 per cent decline in the proportion of child population except Wayanad which has a decline of 2 per cent. It shows that new addition to population in northern districts is faster than in the southern districts. Details are given in **Appendix 1.1**.

The share of urban population in Kerala was 47.7 per cent, representing a decadal increase of 21.74 per cent between 2001 and 2011. As many as 15,934,926 persons in the State were living in urban areas. The rural population was 17,471,135. The district in which the proportion of the urban to total population was highest is Ernakulam

Figure 1.1
Child Population in Kerala, in per cent



Source: Census 2001, 2011

(68 per cent). The share of urban population is lowest in Wayanad (3.9 per cent).

Literacy

Kerala has the highest proportion of literate persons in the population among Indian States. The effective literacy rate is 93.91 per cent. Literacy was 90 per cent at the Census of 2001. The national literacy rate is 72 per cent. Among districts, Kottayam tops in the literacy chart with 97.2 per cent and Pathanamthitta is just behind with 96.5 per cent. Wayanad has the lowest literacy rate of 89 per cent and Palakkad is just above with 89.3 per cent. Even the lowest literacy rate of Wayanad (89 per cent) is higher than national rate of literacy. All districts have a score above 90 except Palakkad (89.3) and Wayanad (89). The difference between the lowest and the highest value is just 8.2. As compared to 2001, literacy rate of all the districts has improved. Details are given in **Appendix 1.1**.

Sex Ratio

The sex ratio (number of females per thousand males) of Kerala according to Census 2011 is 1084 and has improved by 26 points from 2001. The

sex ratio of Kerala was 1022 in 1961 and increased to 1016 in 1971. It further increased to 1032 and 1036 in 1981 and 1991 respectively. Sex ratio of Tamil Nadu is 996, of Karnataka is 973, of Andhra Pradesh is 993 and that of India is 943.

Among the districts, Kannur has the highest sex ratio (1136) followed by Pathanamthitta (1132). While Idukki has the lowest ratio (1006), Ernakulam is just above with 1027. All the districts have sex ratio above 1000. In 2001, only Wayanad had ratio below 1000 (994). The difference between the lowest (Idukki, 1006) and highest (Kannur, 1136) is 130 points. Details are given in **Appendix 1.2**.

Child Sex Ratio (0-6 Years)

Child sex ratio in Kerala is 964 as per the 2011 census data. It was 960 in 2001. The child sex ratio in Tamil Nadu is 943, Karnataka 948, Andhra Pradesh 939 and the national figure is 919. Among districts, Pathanamthitta has the highest ratio (976) followed by Kollam (973) and Kannur (971). Thrissur has the lowest ratio (950), and Alappuzha is just above with a ratio of 951.

The difference between lowest and highest is 26 points. All districts have a ratio below 1,000. When analysing the decadal change, the highest increase is in Kollam (13) followed by Kozhikode (10). The decadal change in other districts is below 10. Thrissur (-)8, Idukki (-)5 and Alappuzha (-)5 have negative decadal change in child sex ratio. Details are in **Appendix 1.2**.

Density of Population

Kerala's density of population as per 2011 census is 860 persons per sq. km. While density of population in Tamil Nadu is 555, Karnataka 319, Andhra Pradesh 308, and that of India is 382. Thiruvananthapuram is the most densely populated district (1,508) while, Idukki is the least densely populated district (255). Density of population increased in all districts between the Censuses of 2001 and 2011, other than in Pathanamthitta and Idukki. Details are in **Appendix 1.1**.

District-Wise Distribution of Population

The details of District-wise population in the State are in **Table 1.1**.

Analysis of district-wise distribution of State population for the last 40 years from 1981 to 2011 shows that Malappuram district continues to hold largest share of State population followed by Thiruvananthapuram and Ernakulam. Wayanad continues to have the smallest share of State population. Idukki, Kasragode and Pathanamthitta also have a lower share of State population.

Age Group Distribution

It is interesting to note the demographic transition in Kerala during the last fifty years. It is observed that the proportion of population in the age group of (0-14 years), has declined from 43 per cent in 1961 to 23 per cent in 2011. In the case of working age group (15-59 years), the population is increasing but at a lower rate. However, due to the increasing life expectancy and availability of health facilities, the proportion of population in the old age group (60 years and above) is showing an increasing trend from 6 per cent in 1961 to 13 per cent in 2011 (**Figure 1.2**).

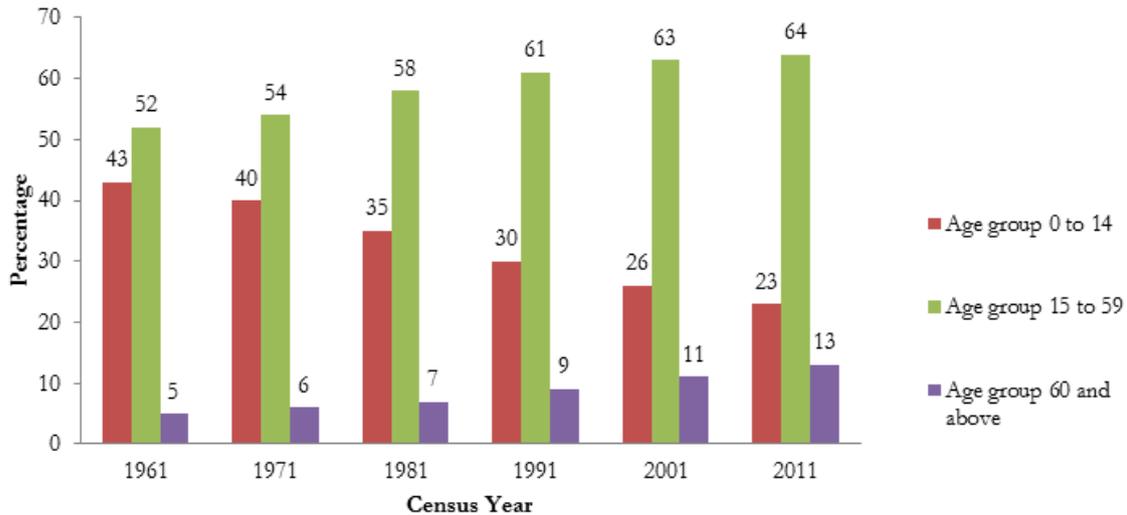
If the trend continues like this, in the near future, the addition to the working age group (15-59) will decrease as the feeder category (0-14) is

Table 1.1
District-wise Population from 1981 to 2011, in per cent

Unit	1981	1991	2001	2011
Kerala	100.0	100.0	100.0	100.0
Kasaragod	3.4	3.7	3.8	3.9
Kannur	7.6	7.7	7.6	7.6
Wayanad	2.2	2.3	2.5	2.4
Kozhikode	8.8	9.0	9.0	9.2
Malappuram	9.4	10.6	11.4	12.3
Palakkad	8.0	8.2	8.2	8.4
Thrissur	9.6	9.4	9.3	9.3
Ernakulam	10.0	9.7	9.8	9.8
Idukki	3.8	3.7	3.5	3.3
Kottayam	6.7	6.3	6.1	5.9
Alappuzha	7.3	6.9	6.6	6.4
Pathanamthitta	4.4	4.1	3.9	3.6
Kollam	8.5	8.3	8.1	7.9
Thiruvananthapuram	10.2	10.1	10.2	9.9

Source: Census 1981,1991,2001,2011

Figure 1.2
Age Group Distribution (percentage) Kerala 1961-2011



Source: Census 1961, 1971, 1981, 1991, 2001, 2011

diminishing. Moreover, proportion of the old age dependent group (60 and above) will increase which will entail higher social security expenditure by government.

Urbanisation

The decadal growth rate of Kerala has been declining since 1981 at a greater pace than the national level. The decadal growth rate of Kerala during 2001-2011 has registered the lowest growth of 4.9 per cent ever since independence. It is much lower than the decadal growth rate of the nation as a whole which is 17.64 per cent. The gap between the rate of growth of population for India and Kerala has been increasing since 1981. The State's addition to the total population of the country constitutes only 0.83 per cent of the national population growth of 181 million during 2001-2011.

The decadal growth rate of rural population has also been declining since 1971 except for the year 2001. This trend is largely related to the unique settlement pattern of the State. Unlike the other parts of India, the habitation of the State is spread continuously without much open lands or fields separating habitations. A rural area is clearly visible elsewhere in India which mainly consists of vast

areas of agricultural land with hamlets distributed sporadically. However, in Kerala, a number of small and medium towns are distributed in the village background.

In the first Census of 20th century (1901), the State had a population of 6.4 million of which 5.9 million (92.9 per cent) were living in rural areas. The urban population accounted for only half a million, estimated as less than 10 per cent of the total population of the State. Over a period of hundred years, the share of rural population has undergone a steady decline and was 74 per cent of total population in 2001. Significantly, in 2011 census, the population of the State was almost equally divided between rural and urban areas. The State has now an urban population of 159 million which accounts for 47.7 per cent of total population against a rural population of 174 million (52.3 per cent). The decadal growth rate of the urban population is 92.72 per cent in 2011.

It is evident that there is a large increase in the number of towns due to the increase in number of census towns in 2011. A census town is defined as one area which is not statutorily notified as town but has attained urban characteristics in number of population which exceeds 5,000; density of

population is at least 400 persons per sq. km; and a minimum of 75 percentage of male working population is employed outside the agricultural sector. As per Census 2011, there are 461 census towns and 59 statutory towns in Kerala as against 99 and 60 respectively in census 2001 which shows a 366 per cent growth in the number of census towns. This classification of census towns has brought the rural population growth to negative figures. Furthermore, the decadal population growth rate of the towns which existed in both 2001 and 2011 census is estimated to be 3.90 per cent, lower than that of the State's average of 4.86 per cent decadal population growth rate. This negates the scope of migration to the towns as an attribute of urban population growth. The growth in urban population is largely due to the increase in census towns that led to the urban sprawl in the State.

The highest number of towns falls in Thrissur district with 135, which accounts for more than 25 per cent of total towns in the State. Around 60 percentage of towns are located in Thrissur, Kannur, Ernakulam and Kozhikode districts. Urban population has crossed 1 million in 8 districts. Of these, Ernakulam has got the highest urban population, closely followed by Thrissur, Kozhikode and Malappuram districts. The total urban population of these four districts together constitutes more than 50 percentage of urban population in the State. Wayanad and Idukki districts do not have any census towns in

2011, except one statutory town each. Wayanad is the district with least urban population in the State. Considering the urban population growth index during 2001-2011, the index increased in all districts except Idukki. Malappuram district shows significant increase in urban population growth index followed by Kollam, Thrissur and Kasaragod. Wayanad has the least index value.

In terms of share of rural population to the total population of the State, Malappuram and Palakkad together account for 25 per cent. Along with the above districts, Kasargod, Kottayam, Pathanamthitta, Kollam, Idukki and Wayanad are the other districts where rural population outnumber the urban population. In Idukki and Wayanad, rural population exceeds 95 per cent of the population of the districts.

The overall sex ratio of the State is 1084 female for 1000 male. Sex ratio of rural area is 1077 and urban area is 1091. A notable change in sex ratio of 2001 and 2011 census is that the number of males predominated in Wayanad district and rural areas of Idukki district in 2001 census. Now in 2011 the position has entirely changed in favour of female in all districts irrespective of rural and urban divide. As far as the number of children in the age group 0-6, there is a huge fall in the absolute number by 470,899 which is a positive indicator of fall in fertility and future growth of population. The rural-urban sex-wise break up of child population shows negligible variation.

NATIONAL AND STATE INCOME

National Income

The Central Statistics Office (CSO), Ministry of Statistics and Programme Implementation, has released the provisional estimates of National Income for the financial year 2016-17 both at constant (2011-12) and current prices. The Gross National Income (GNI) at 2011-12 prices

is estimated at ₹120.35 lakh crore in 2016-17, as against the previous year's estimate of ₹112.46 lakh crore. In terms of growth rates, the gross national income is estimated to have risen by 7.0 per cent during 2016-17, in comparison to the growth rate of 8.0 per cent in 2015-16. The GNI at current prices is estimated at ₹149.94 lakh crore in 2016-17, as compared to ₹135.22 lakh crore in 2015-16,

showing a rise of 10.9 per cent. The Net National Income (NNI) at current prices is estimated at ₹134.08 lakh crore in 2016-17, as compared to ₹120.76 lakh crore in 2015-16, showing an increase of 11.0 per cent. Details are given in **Table 1.2**.

Real Gross Value Added (GVA) at basic constant (2011-12) prices for the year 2016-17 is estimated at ₹111.85 lakh crore showing a growth rate of 6.6 per cent over the GVA for the year 2015-16 of ₹104.91 lakh crore. The GVA at current prices is estimated at ₹136.69 lakh crore during 2016-17, as compared to ₹124.58 lakh crore during 2015-16, showing an increase of 9.7 per cent.

GDP at constant (2011-12) prices for the year 2016-17 is estimated at ₹121.90 lakh crore showing a growth rate of 7.1 per cent over the year 2015-16 of ₹113.81 lakh crore. GDP at current prices in the year 2016-17 is estimated at ₹151.84 lakh crore,

showing a growth rate of 11.0 per cent over the estimates of GDP for the year 2015-16 of ₹136.82 lakh crore. The per capita GDP in real terms (at 2011-12 prices) during 2016-17 is estimated at ₹93,840 as against ₹88,706 in 2015-16, registering an increase of over 5.8 per cent during the year. The per capita GDP at current prices is estimated at ₹116,888 in 2016-17 as against ₹106,641 for the previous year showing a growth of 9.6 per cent.

There are some conceptual differences between the key aggregates of national accounts published till 2014-15 at 2004-05 base year prices and 2011-12 base year prices being published now. Base year has been revised in the computation of national accounts statistics from 2004-05 to 2011-12. Some concepts have also undergone changes following the adoption of System of National Accounts (2008). GDP at factor cost has been replaced by Gross Value Added (GVA)

Table 1.2
National Income, Domestic Product and Per Capita Income at 2011-12 prices and current prices (All India), ₹ in crore

S I . No	Item	At 2011-12 Prices			At Current Prices		
		2014-15 (NS)	2015-16 (NS)	2016-17 (PE)	2014-15 (NS)	2015-16 (NS)	2016-17 (PE)
1	GVA at basic prices	9719023	10490514 (7.9)	11185440 (6.6)	11481794	12458642 (8.5)	13669914 (9.7)
2	Gross National Income (GNI)	10412280	11246305 (8.0)	12034713 (7.0)	12297698	13522256 (10.0)	14994109 (10.9)
3	Net National Income (NNI)	9231556	9982112 (8.1)	10686776 (7.1)	10953761	12076882 (10.3)	13408211 (11.0)
4	Gross domestic product (GDP)	10536984	11381002 (8.0)	12189854 (7.1)	12445128	13682035 (9.9)	15183709 (11.0)
5	Net domestic product (NDP)	9356260	10116809 (8.1)	10841917 (7.2)	11101191	12236662 (10.2)	13597811 (11.1)
6	Per capita Gross domestic product (₹)	83165	88706 (6.7)	93840 (5.8)	98225	106641 (8.6)	116888 (9.6)
7	Per capita Net domestic product (₹)	73846	78853 (6.7)	83464 (5.8)	87618	95375 (8.8)	104679 (9.7)

Note: The figures in parenthesis show the percentage change over previous year.

NS- New Series Estimate, PE- Provisional Estimate

Source: Central Statistics Office.

at basic prices and GDP at market prices is now termed GDP.

The details of GDP, NDP, GNI and NNI at current and constant (2011-12) prices from 2012-13 to 2016-17 with percentage change over previous year are given in **Appendix 1.3, 1.4, 1.5 and 1.6**. The sectoral distribution of GVA at basic price at constant (2011-12) prices and current prices with percentage change over previous year is given in **Appendix 1.7 and Appendix 1.8**.

State Income

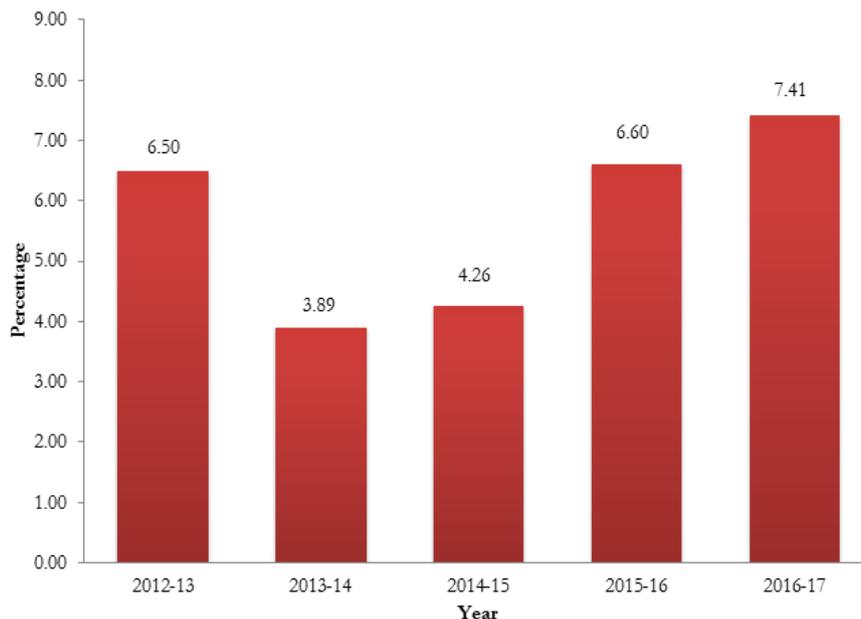
The quick estimate of Gross State Domestic Product (GSDP) at constant (2011-12) prices is ₹48,087,791 lakh during 2016-17 as against the provisional estimate of ₹44,769,237 lakh during 2015-16, registering a growth rate of 7.41 per cent in 2016-17 compared to 6.60 per cent in 2015-16 (**Figure 1.3**). At current prices the Gross State Domestic Product is estimated at ₹61,703,466 lakh (quick estimate) in 2016-17 as against the provisional estimate of ₹55,794,651 lakh during 2015-16 showing a growth rate of 10.59 per cent.

The quick estimate of Net State Domestic Product (NSDP) at factor cost at constant prices (2011-12) is ₹44,051,533 lakh in 2016-17 compared to the provisional estimate of ₹40,906,975 lakh during 2015-16, recording a growth rate of 7.69 per cent in 2016-17. At current prices the NSDP is estimated at ₹55,848,205 lakh (quick estimate) in 2016-17 compared to the provisional estimate of ₹50,392,861 lakh during 2015-16. The growth rate of NSDP at current prices is 10.83 per cent in 2016-17 compared to 9.40 per cent in 2015-16 (**Table 1.3**).

Per Capita State Income

As per the quick estimates, the per capita GSDP at constant (2011-12) prices in 2016-17 was ₹140,107 as against the provisional estimate of ₹131,086 in 2015-16, recording a growth rate of 6.88 per cent in 2016-17. At current prices, the per capita GSDP in 2016-17 was ₹179,778 registering a growth rate of 10.04 per cent over the previous year's estimate of ₹163,369. The best indicator of per capita State income is NSDP divided by the population. At constant (2011-12)

Figure 1.3
Growth Rate of GSDP at Constant (2011-12) Prices, Kerala, in per cent



Source : Department of Economics and Statistics

Table 1.3
State Domestic Product and Per Capita Income of Kerala

Sl. No	Item	Income (₹Lakh)			Growth Rate (in per cent)	
		2014-15	2015-16 (P)	2016-17 (Q)	2015-16 (P)	2016-17 (Q)
1	Gross State Domestic Product					
	a) At Constant (2011-12) Prices	41,995,555	44,769,237	48,087,791	6.60	7.41
	b) At Current Prices	51,256,405	55,794,651	61,703,466	8.85	10.59
2	Net State Domestic Product					
	a) At Constant (2011-12) Prices	38,213,426	40,906,975	44,051,533	7.05	7.69
	b) At Current Prices	46,061,432	50,392,861	55,848,205	9.40	10.83
3	Per Capita GSDP (₹)					
	a) At Constant (2011-12) Prices	123,573	131,086	140,107	6.08	6.88
	b) At Current Prices	150,824	163,369	179,778	8.32	10.04
4	Per Capita NSDP (₹)					
	a) At Constant (2011-12) Prices	112,444	119,777	128,347	6.52	7.15
	b) At Current Prices	135,537	147,552	162,718	8.86	10.28

Source: Department of Economics and Statistics
P: Provisional Estimate, Q: Quick Estimate

prices, the quick estimates of per capita NSDP in 2016-17 was ₹128,347 as against provisional estimate of ₹119,777 in 2015-16, recording a growth rate of 7.15 per cent in 2016-17. **Figure 1.4** shows that during the period 2012-13 to 2016-17, the per capita State income at constant prices was higher than the per capita national income.

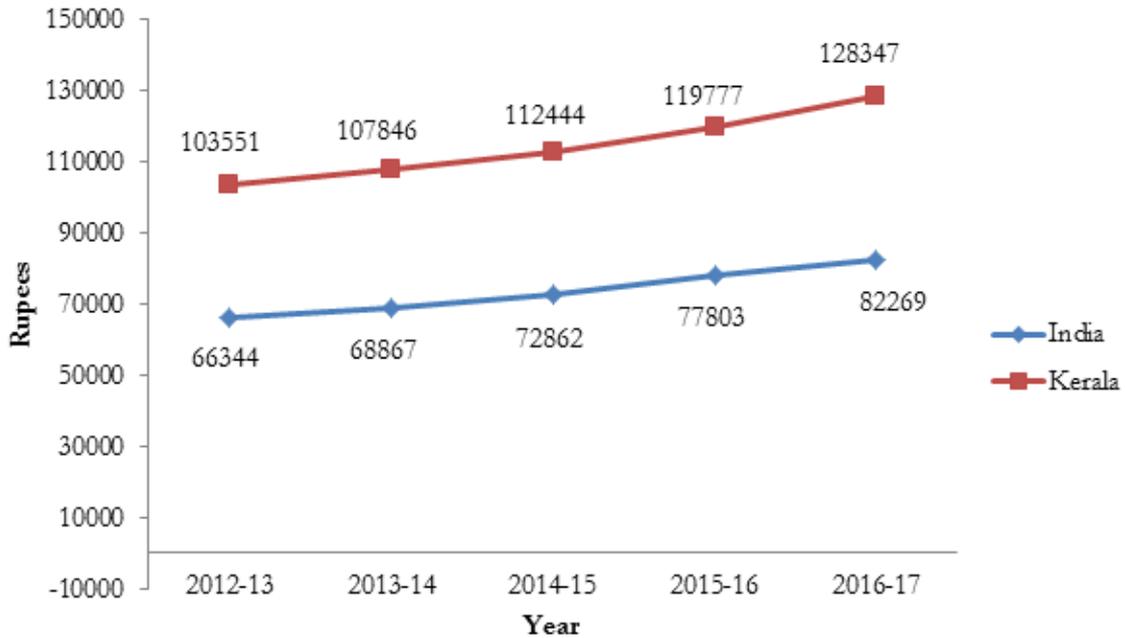
Sectoral Distribution of Gross State Value Added (GSVA)

During 2016-17, the contribution from primary, secondary and tertiary sectors to the GSVA at constant prices (2011-12) was 11.27 per cent, 25.59 per cent and 63.14 per cent respectively. At current prices, the primary, secondary and tertiary sectors contributed 13.36 per cent, 23.47 per cent and 63.18 per cent respectively to the GSVA during this period. (**Figure 1.5**).

The contribution to GSVA (at current prices) of the tertiary sector and primary sector increased from 62.59 per cent in 2015-16 to 63.18 per cent in 2016-17, and from 12.82 per cent in 2015-16 to 13.36 per cent in 2016-17 respectively. During the corresponding period the contribution of secondary sector declined from 24.59 per cent to 23.47 per cent.

The analysis of annual sectoral growth rate of GSDP shows that tertiary sector recorded the highest rate of growth of 6.7 per cent in 2016-17 at constant (2011-12) prices followed by primary sector (5.19 per cent) and tertiary sector 2.88 per cent. During the period, the growth rate in primary sector increased from -11.2 per cent to 5.19 mainly because of the increase in production of some of the crops, live stocks, fishing and aquaculture and mining and quarrying.

Figure 1.4
Per Capita State Income and National Income at constant (2011-12) prices, in ₹



Source: Central Statistics Office and Department of Economics and Statistics

At current prices, the primary sector recorded a growth rate of 13.25 per cent, tertiary sector 9.72 per cent and secondary sector 3.74 per cent in 2016-17. The driving force for the growth of the tertiary sector is mainly the growth in the Transport, storage, communication and service related broadcasting and public administration.

During the period 2013-14 to 2015-16, the share of contribution of tertiary sector has increased from 60.43 to 63.66 per cent. However, the share of primary sector decreased from 13.45 per cent to 12.07 per cent and secondary sector also decreased from 25.81 to 24.27 per cent during this period. The details of sectoral distribution of GSDP with

Figure 1.5
Sectoral Distribution of GSDP 2016-17 at Basic Prices

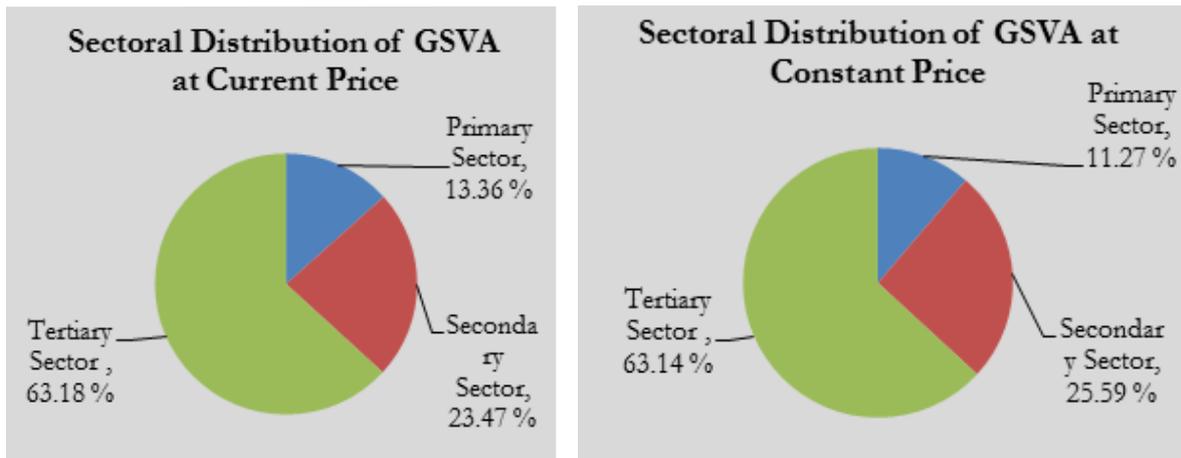


Table 1.4
District-wise Distribution of Gross State Value Added

Sl. No	District Name	Gross State Value Added at Basic Price (₹ in lakh)					
		At Current Prices			At Constant Prices (2011-12)		
		2015-16 (P)	2016-17 (Q)	Growth Rate (%)	2015-16 (P)	2016-17 (Q)	Growth Rate (%)
1	Thiruvananthapuram	5,119,355	5,567,163	8.75	4,087,733	4,311,759	5.48
2	Kollam	4,568,252	4,980,196	9.02	3,622,737	3,825,637	5.60
3	Pathanamthitta	1,438,255	1,599,967	11.24	1,135,630	1,218,492	7.30
4	Alappuzha	3,650,842	3,959,161	8.45	2,922,450	3,069,069	5.02
5	Kottayam	3,021,186	3,273,951	8.37	2,504,602	2,627,009	4.89
6	Idukki	1,895,868	2,056,010	8.45	1,453,150	1,485,762	2.24
7	Ernakulam	6,296,547	6,918,835	9.88	5,125,647	5,491,752	7.14
8	Thrissur	5,178,400	5,561,292	7.39	4,144,093	4,343,482	4.81
9	Palakkad	3,717,274	3,998,133	7.56	2,904,804	3,034,377	4.46
10	Malappuram	4,896,021	5,363,418	9.55	3,889,842	4,144,456	6.55
11	Kozhikode	4,395,664	4,681,302	6.50	3,491,034	3,633,201	4.07
12	Wayanad	1,029,524	1,107,058	7.53	770,726	802,474	4.12
13	Kannur	3,509,232	3,866,359	10.18	2,823,432	3,027,512	7.23
14	Kasaragod	1,718,063	1,889,926	10.00	1,359,393	1,443,907	6.22
	GSVA	50,434,483	54,822,771	8.70	40,235,273	42,458,889	5.53

Source: Department of Economics and Statistics, (P: Provisional Q:Quick)

percentage share during the last three years is given in **Appendix 1.9, 1.10 and 1.11** and the details of GSDP, NSDP at constant and current prices during 2011-12 to 2015-16 are given at **Appendix 1.12, 1.13, 1.14 and 1.15**.

District-wise Gross State Domestic Product

District-wise distribution of GSVA at basic price at current prices shows that Ernakulam District continues to have the highest income of ₹6,918,835 lakh in 2016-17 as against ₹6,296,547 lakh in 2015-16 registering a growth rate of 9.88 per cent. At constant (2011-12) prices, this amounts to ₹5,491,752 lakh in 2016-17 compared to ₹5,125,647 lakh in 2015-16. The district wise GSVA details are given in **Table 1.4**.

District-Wise Per Capita Income

The analysis of district-wise per capita reveals that Ernakulam district continues to stand first with the per capita income of ₹162,297 at constant (2011-12) prices in 2016-17 as against ₹152,318 in 2015-16. The district wise per capita income with corresponding rank and growth rate is given in **Table 1.5**.

Table 1.5 reveals that Thiruvananthapuram, Kollam, Pathanamthitta, Ernakulam, Kannur, Kasargod, Malappuram, had a higher growth than the State average growth rate in per capita income in 2016-17. However, the districts of Alappuzha, Kottayam, Idukki, Thrissur, Palakkad, and Wayanad districts showed lower growth than the State average growth rate in per capita income. District wise and sectoral distribution of GSVA from 2014-15 to 2016-17 at current and constant (2011-12) prices are given in **Appendix 1.16, 1.17, 1.18, 1.19, 1.20 and 1.21**.

Table 1.5
District-Wise Per Capita Income at Basic Price – constant (2011-12) Prices

Sl. No.	District	2015-16 (P)	Rank	2016-17 (Q)	Rank	Growth Rate (%)
1	Thiruvananthapuram	122,679	7	129,137	7	5.26
2	Kollam	136,282	3	143,638	2	5.40
3	Pathanamthitta	96,134	12	103,460	12	7.62
4	Alappuzha	136,804	2	143,542	3	4.92
5	Kottayam	126,238	6	132,267	6	4.78
6	Idukki	132,107	4	135,316	5	2.43
7	Ernakulam	152,318	1	162,297	1	6.55
8	Thrissur	129,922	5	135,518	4	4.31
9	Palakkad	100,128	10	103,855	11	3.72
10	Malappuram	89,357	14	94,012	14	5.21
11	Kozhikode	109,632	8	113,307	9	3.35
12	Wayanad	92,353	13	95,715	13	3.64
13	Kannur	109,602	9	116,982	8	6.73
14	Kasaragod	100,198	11	105,555	10	5.35
	Kerala	117,811		123,707		5.01

P: Provisional Q: Quick

Source: Department of Economics and Statistics

STATE FINANCES

Aspects of international and domestic financial crisis have severe implications on the economy of State of Kerala. As is well known a sustained surge in demand is crucial to maintain sustained economic growth. Problems of external and domestic demand are thus important aspects of the recent problems of economic growth. Kerala State economy has historically been linked in different ways to the rest of the world and thus cannot be free from grave challenges of faltering economic growth in different parts of the world.

Policies of nationalisation implemented in the countries of the Gulf Co-operation Council have had an impact on the inflow of foreign remittances to Kerala and consequently on the household consumption demand. Other activities in the State, particularly, in the fields of trade, real estate, and

construction are also weakened by any decline in foreign remittances. Performance in export oriented industries such as cashew, coir, handloom and in other cash crops assumes much significance in terms of economic output and employment in Kerala. A deceleration of export demand combined with national trade policies has resulted in a decline in the prices of plantation and related products, affecting adversely the traditional industries that have been the mainstay of State economy.

The State has always been proud of its high growth in State GDP with regard to the national average. However, the latest statistics of Central Statistical Organisation (CSO), State GDP growth are not very encouraging in this regard. The growth in the State economy now lags behind the national average for the first time. The growth of State Domestic

Product, which consistently stood above the national average, began to show a declining trend from 2012-13 and further deteriorated to a level of 8.59 per cent in 2015-16, when the national average stood at the level of 9.94 per cent.

When the present government assumed office in 2016, it inherited a precarious legacy. The previous Government left behind a net unpaid negative treasury cash balance of ₹173.46 crore. The new government had to bear the brunt of huge magnitude of deferred liabilities of the previous government, amounting to around ₹6000 crore and also non-budgeted short term liabilities of ₹4300 crore. The new government had the difficult task of tiding over the huge financial burden shouldered upon it against the backdrop of low buoyancy in revenue receipts consequent on the previous governments' imprudent taxation policies. The failure in tax administration is shown by the data of tax growth from 2010-11 to 2015-16. The tax growth which was at a high point of 23.24 per cent in 2010-11 declined sharply to the level of 10.68 per cent in 2015-16. The distress felt in State economy also led to low buoyancy in revenue growth. The government had to take strenuous fiscal correction measures to bring back State finances into a safer zone by means of improved tax collection by ensuring better compliance and implementation of technological improvement and efficiency in tax administration.

To overcome the stark economic problems of the day, the new Government took the bold step of presenting an alternative development model. In 2016, the State Government introduced a multi-pronged development strategy that included an attempt to achieve sustainable infrastructure growth, and provided comprehensive social security packages to vulnerable sections of the society. A package was also formulated to combat recession and economic stagnation. State Government infused substantial sums into the traditional sectors in order to rejuvenate industries such as cashew, coir, and handloom, where the livelihoods of thousands had been hit by sharp declines in commodity prices.

The macroeconomic problems of States were exacerbated by the demonetisation policy. As the report of the Committee on the impact of

demonetisation on Kerala's economy appointed by State Planning Board pointed out, purchasing power and economic activity in the State was severely affected by demonetisation.

Economic activities in sectors such as coir, handloom, agriculture and allied activities came almost to a standstill because of currency shortages. The co-operative sector, which has a long history in the upliftment of Kerala's rural and urban economy, was brought to the verge of shutdown in the aftermath of demonetisation. The people had to undergo much hardship in the immediate post-demonetisation phase. Consumption demand stagnated. Investment was affected and a decline in economic growth was an inevitable consequence of demonetisation. Demonetisation led to a fall in GSDP and revenues. The revenue led fiscal consolidation policy was severely affected by unexpected policy of demonetisation. Increasing demand reflected in consumption expenditure is the mainstay of State revenues. Once consumption expenditure decelerates, so do inflows into State coffers. The fiscal cost of demonetisation was felt in its negative impact on the fiscal correction road map. The efforts of the State Government to raise tax revenues in 2016-17 was severely affected and the State was able to achieve 8.16 per cent growth against the revised targeted growth of 14.24 per cent, thus upsetting severely fiscal parameters envisaged in the Budget. The financial indicators for the State are given in **Table 1.6**.

The revenue-led fiscal consolidation strategy adopted by the State after enactment of Kerala Fiscal Responsibility Act 2003 had made significant strides in the State's fiscal performance for a certain period of time. The revenue deficit which was 3.51 per cent of GSDP in 2002-03, came down to 1.13 per cent in 2010-11 and fiscal deficit decreased to 2.38 per cent from 4.24 per cent during this period. However after this period buoyancy in revenue mobilisation was not enough to sustain the fiscal performance that had been achieved. Revenue deficit and fiscal deficit ratio to GSDP during the period from 2011-12 to 2015-16 was in the range of 2.2 to 1.73 per cent and 3.52 to 3.19 per cent respectively. Revenue deficit and fiscal deficit ratio to GSDP could be sustained at this level during 2015-16, obviously because of

Table 1.6
Financial Indicators of Government of Kerala, ₹ in crore

Particulars	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Balance from current Revenue (BCR)	-910	-5449	-4973	-6917	-9533	-1322	-5253
Interest Ratio	0.18	0.17	0.16	0.17	0.17	0.16	0.16
Capital Outlay/Capital receipts	0.43	0.31	0.29	0.25	0.23	0.42	0.38
Return of Investment ratio	0.020	0.016	0.016	0.018	0.012	0.013	0.013
Outstanding Guarantees (including interest)/Revenue Receipts	0.24	0.22	0.22	0.20	0.19	0.18	0.21
Assets/Liabilities	0.40	0.40	0.40	NA	NA	NA	NA

Source: Finance Department, GOK.

NA: Not available

fact that Central Government had awarded the post devolution revenue deficit grant of ₹4640 crore. However the fiscal indicators suffered a setback during 2016-17 due to certain explicit reasons. The proportion of revenue and fiscal deficit fell down to the level of 2.51 and 4.29 per cent of GSDP. The unexpected currency scrapping exercise had hit hard revenue buoyancy of the State in an unprecedented manner. Additional outgo consequent on implementation of 10th pay revision, clearance of huge amount of contingent liabilities left over by

the previous government, disbursement of social security pensions with long pending arrears were also the major reasons behind slippage in fiscal indicators during 2016-17. Despite these facts it is noteworthy to point out that expenditure under health and education sectors had made sustainable increase of 26 per cent and 19 per cent respectively during 2016-17, which was a significant achievement in the midst of fiscal imbroglio. Major deficit indicators of the State for the period from 2010-11 to 2017-18 (BE) is shown in **Table 1.7**.

Table 1.7
Major Deficit Indicators, ₹ in crore

Year	Revenue Deficit		Fiscal Deficit		Primary Deficit (-)/ Surplus(+)		GSDP
	Amount	% to GSDP	Amount	% to GSDP	Amount	% to GSDP	
2010-11	3,673.87	1.13	7,730.46	2.38	-2,040.80	-0.63	324,512.65
2011-12	8,034.26	2.21	12,814.77	3.52	-6,521.17	-1.79	364,047.88
2012-13	9,351.45	2.27	15,002.47	3.64	7,797.66	1.89	412,313.00
2013-14	11,308.56	2.43	16,944.13	3.64	8,678.74	1.87	465,041.21
2014-15	13,795.96	2.69	18,641.72	3.64	8,872.13	1.73	512,564.05
2015-16	9,656.81	1.73	17,818.46	3.19	6,707.61	1.20	557,946.51
2016-17	15,484.59	2.51	26,448.35	4.29	14,331.85	2.32	617,034.66
2017-18 (BE)	16,043.14	2.14	25,756.32	3.44	12,124.49	1.62	747,945.00

Source: Finance Department, GOK.

Receipts

State government receipts can broadly be divided into Revenue and Capital receipts. The revenue receipts comprise State's own tax and non-tax revenues, share of central tax transfers and grants-in-aid from Government of India, whereas capital receipts mostly consist of disinvestment receipts, recoveries of loans and advances, debt receipts from internal resources and loans and advances from Government of India and net accretions under public account.

Revenue Receipts

The revenue receipts of the State increased from ₹30,990.95 crore in 2010-11 to ₹75,611.72 crore in 2016-17. However during this period, growth rate of revenue receipts decreased from 18.70 per cent to 9.53 per cent. Revenue receipts of the State in proportion to GSDP decreased marginally to 12.25 per cent in 2016-17 from 12.37 per cent in 2015-16. The trend in Revenue Receipts from 2010-11 to 2017-18 (BE) is given in **Figure 1.6**.

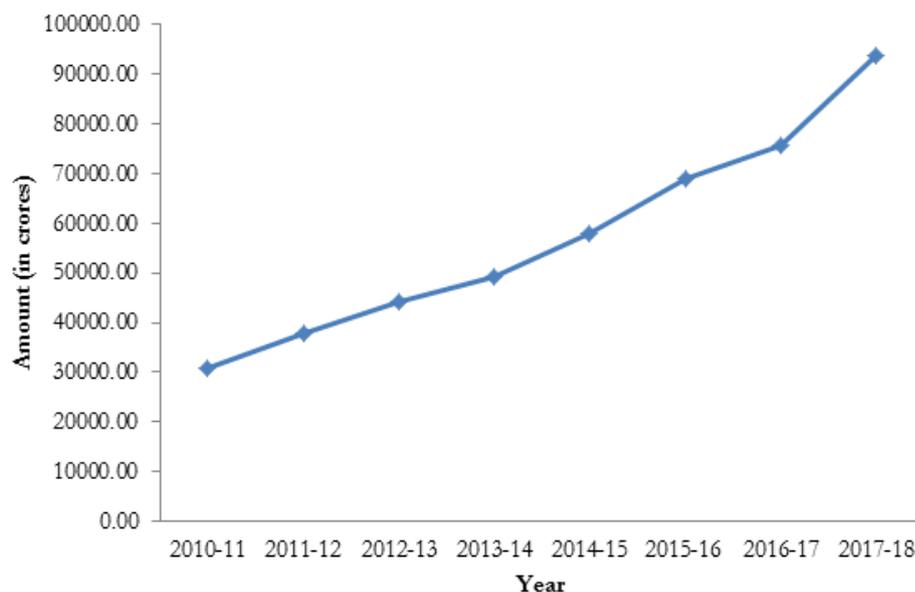
State's own taxes are the main source of revenue receipts of the State. In 2016-17, contribution from State's own taxes was ₹42176.38 crore which constitutes 55.78 per cent of the total revenue

collection. During this period, contributions from the share of central taxes and grants was ₹23735.36 crore and State's own non-tax revenue was ₹9699.98 crore. The details of Revenue Receipts from 2010-11 to 2017-18 BE is given in **Appendix 1.22**.

State's Own Tax Revenue (SOTR)

The main sources of State's Own Tax Revenue (SOTR) are Sales Tax including VAT, Stamps and Registration fees, State Excise Duties, Motor Vehicle Tax and Land Revenue. Growth rate of State's Own Tax Revenue showed a declining trend for the last five years. In 2010-11, it was 23.24 per cent where as in 2016-17 it came down to 8.16 per cent. But the receipt from State's Own Tax Revenue showed a marginal increase in 2016-17 (₹42,176.38 crore) against 2015-16 (₹38,995.15 crore). Of the SOTR, the major share was from sales tax including VAT. In 2016-17, receipts from sales tax and VAT contributed ₹33,453.49 crore which was 79.32 per cent of the total SOTR, followed by 7.37 per cent from taxes on vehicles (₹3,107.23 crore), 7.13 per cent from stamp duties and registration fees (₹3,006.59 crore), 4.79 per cent from State Excise Duties (₹2,019.30 crore) and 0.29 per cent from Land Revenue (₹124.15 crore). The receipts from Sales tax including VAT showed 8.84 per cent growth in 2016-17 over the previous

Figure 1.6
Trend in Revenue Receipts, Kerala, ₹ in crore



year. The details of State's Own Tax Revenue from 2010-11 to 2017-18 (BE) is given in **Appendix 1.23**.

State's Own Non-Tax Revenue (SONTR)

Receipts under State Lotteries have been the major source of non-tax revenue of the State for last five years. Other main sources of SONTR are receipts from interest receipts and dividends, receipts from various social developmental services and sale proceeds of forest produces.

Receipts from SONTR showed an increasing trend for the last few years. But the annual growth rate of SONTR indicated a downward trend from 2013-14 onwards. In 2013-14, annual growth rate of SONTR was 32.79 per cent which became less than half in 2016-17 (15.13 per cent). In 2016-17, receipts from state lotteries were ₹7,283.29 crore recording a growth rate of 16.13 per cent compared to 2015-16 (₹6,271.41 crore). This constitutes 75.09 per cent of the total non-tax revenue of the State. The details of State's own non-tax revenue from 2010-11 to 2017-18 (BE) is given in **Appendix 1.24**.

Central Transfers

Central transfers comprises of share in central taxes and grants in aid from Centre. State's share

in central taxes and grant in aid is determined on the basis of recommendations of the Finance Commissions. As per the recommendations of 14th Finance Commission, the share of the States on the net proceeds of Union Government during the period from 2015-16 to 2019-20 will be 42 per cent. The share pattern for the last two Finance Commissions viz. Twelfth (period 2005-10) and Thirteenth (period 2010-15) were 30.5 per cent and 32 per cent respectively. The State specific share during the 14th Finance Commission period is 2.5 per cent, as against the 2.36 per cent in the 13th Finance Commission award period.

The 14th Finance Commission has recommended ₹9,519 crore to the State for the period from 2015-16 to 2017-18 as Post Devolution Revenue Deficit Grant. Accordingly State had received deficit grant of ₹4,640 crore in 2015-16 and ₹3,350 crore in 2016-17. The receipt in 2017-18 would be ₹1,529 crore.

The annual growth rate of central transfers has increased from 2013-14 to 2015-16. The central transfers by way of share of central taxes and grant-in aid received in 2015-16 was ₹21,612.02 crore against ₹11,606.89 crore in 2013-14. But in 2016-17, even though the total central transfers

Table 1.8
Central Transfers: 2010-11 to 2017-18 (BE), ₹ in crore

Year	Share in Central Taxes and Duties		Grant-in-aid and other receipts from Centre for Plan and Non-Plan		Total Transfers	
	Amount	Annual Growth Rate (%)	Amount	Annual Growth Rate (%)	Amount	Annual Growth Rate (%)
2010-11	5,141.85	16.89	2,196.62	-1.65	7,338.47	10.65
2011-12	5,990.36	16.50	3,709.22	68.86	9,699.58	32.17
2012-13	6,840.65	14.19	3,021.53	-18.54	9,862.18	1.68
2013-14	7,468.68	9.18	4,138.21	36.96	11,606.89	17.69
2014-15	7,926.29	6.13	7,507.99	81.43	15,434.28	32.98
2015-16	12,690.67	60.11	8,921.35	18.82	21,612.02	40.03
2016-17	15,225.02	19.97	8,510.35	-4.61	23,735.37	9.82
2017-18 (BE)	16,891.75	10.95	11,243.71	32.12	28,135.46	18.54

Source: Finance Department, GOK.

increased, the annual growth rate decreased over 2015-16. In 2016-17, total Central transfers to the State was ₹23,735.37 crore against ₹21,612.02 crore in 2015-16. In this period share of central taxes was ₹15,225.02 crore witnessing a growth rate of 19.97 per cent. In 2016-17, the State had received ₹8,510.35 crore as grant in aid from Centre which includes Post Devolution Revenue Deficit grant of ₹3,350 crore. The details of central transfers from 2010-11 to 2017-18 (BE) is given in **Table 1.8**.

Expenditure

Expenditure of the State includes three components viz. revenue expenditure, capital expenditure and expenditure on loan disbursements. The total expenditure including Plan and non-Plan of the State is almost three fold from 2010-11 to 2016-17. The revenue expenditure as well as the capital expenditure was more than doubled during the same period. Out of the total expenditure of ₹102,382.55 crore in 2016-17, Plan expenditure was ₹22,812.61 crore (22.28 per cent) and non-Plan expenditure was ₹79,569.94 crore (77.72 per cent).

Revenue Expenditure

The revenue expenditure of the State is mainly comprise expenditure on salaries, pension, debt charges, devolutions to the Local Self Government and subsidies. The operational and maintenance cost for the upkeep of the completed projects and programmes are classified under the revenue account. Grants provided by the State to meet salaries and pension liabilities of employees in the Universities and state autonomous bodies and also the pension liabilities of employees of Panchayat Raj Institutions are classified under revenue expenditure. Major portion of revenue expenditure devolved to LSGIs utilised for the creation of capital assets at local body level.

Expenditure on social and economic services together constitutes developmental expenditure. Funds devolved to Local Self Governments for expansion and development and maintenance of

assets is also reckoned as developmental expenditure. Non-developmental expenditure of the State mainly constitutes the committed expenditure consisting of debt charges, expenditure on pension payments and administrative services.

Annual growth rate of revenue expenditure has increased by 15.77 per cent in 2016-17 as against 9.68 per cent in 2015-16. The main reason for the hike in revenue expenditure during this period was the implementation of 10th pay revision. Distribution of social security pensions along with long pending arrears was another reason for increased revenue expenditure. Other factors that contributed for higher revenue expenditure are government's market intervention activities to contain rise in prices of essential commodities and also due to government's priority to impart quality services in health and education sectors. Total revenue expenditure in 2016-17 was ₹91,096.31 crore, of which Plan expenditure was ₹13,491.72 crore and non-Plan expenditure was ₹77,604.59 crore. The ratio of revenue expenditure relative to GSDP had shown a marginal increase of 14.76 per cent in 2016-17 compared to 14.10 per cent in 2015-16. The trend in revenue expenditure of the State from 2010-11 to 2017-18 (BE) is given in **Figure 1.7** and more details including annual growth rate are given in **Appendix 1.25**.

The share of committed expenditure on revenue expenditure was increased during 2016-17 compared to the previous year. Expenditure on committed liabilities on salaries, pension, interest payments, subsidies and devolution to LSGs constitutes 69.31 per cent of revenue expenditure. In 2016-17, salary expenditure as portion of total revenue expenditure was 30.69 per cent where as it was 29.80 per cent in 2015-16. Pension expenditure as per cent of total revenue expenditure was 16.77 per cent in 2016-17 compared to 16.60 per cent in 2015-16. Interest payment as per cent of total revenue expenditure decreased to 13.30 per cent in 2016-17 from 14.12 per cent in 2015-16. Details on share of committed expenditure on revenue expenditure are given in **Table 1.9** and details of developmental and non-developmental expenditure for the period from 2010-11 to 2017-18 BE are given in **Appendix 1.26**.

Figure 1.7
Trend in Revenue Expenditure

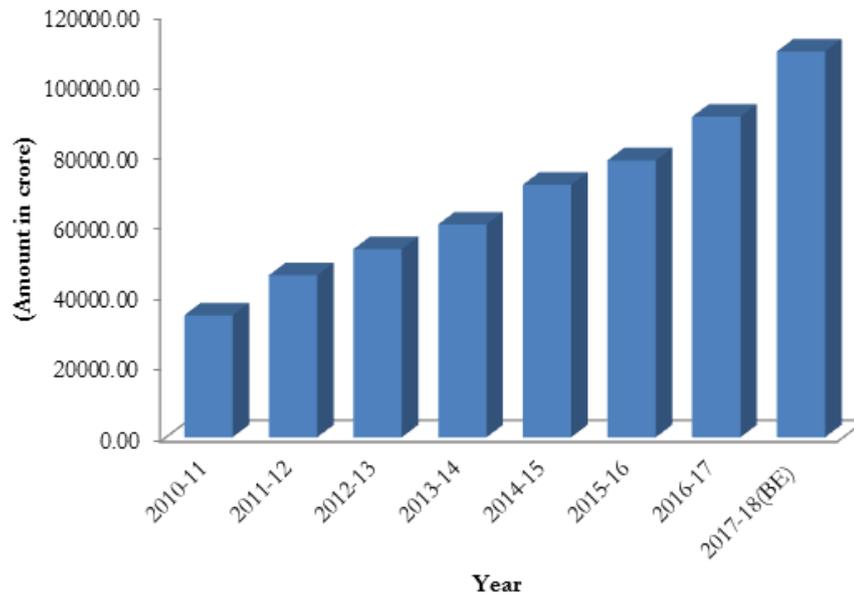


Table 1.9
Share of Committed Expenditure on Revenue Expenditure, ₹ in crore

Items	2012-13		2013-14		2014-15		2015-16		2016-17	
	Expenditure	As per cent of TRE								
i. Salaries	17257.41	32.26	19279.78	31.88	21343.66	29.75	23450.10	29.80	27955.81	30.69
ii. Pension	8866.89	16.58	9971.27	16.49	11252.67	15.68	13062.86	16.60	15277.03	16.77
iii. Interest	7204.81	13.47	8265.39	13.66	9769.59	13.62	11110.62	14.12	12116.50	13.30
iv. Devolutions to LSGDs	4739.33	8.86	5926.00	9.79	7453.00	10.39	5028.92	6.39	6060.00	6.65
v. Subsidies	1265.20	2.37	1251.77	2.07	1247.52	1.74	1343.09	1.71	1730.00	1.90
Committed Expenditure total (i to v)	39333.64	73.54	44694.21	73.89	51066.44	71.18	53995.59	68.62	63140.01	69.31
Others	14155.10	26.46	15791.29	26.11	20679.99	28.82	24693.88	31.38	27956.30	30.69
Total	53488.75	100	60485.50	100	71746.43	100	78689.47	100	91096.31	100

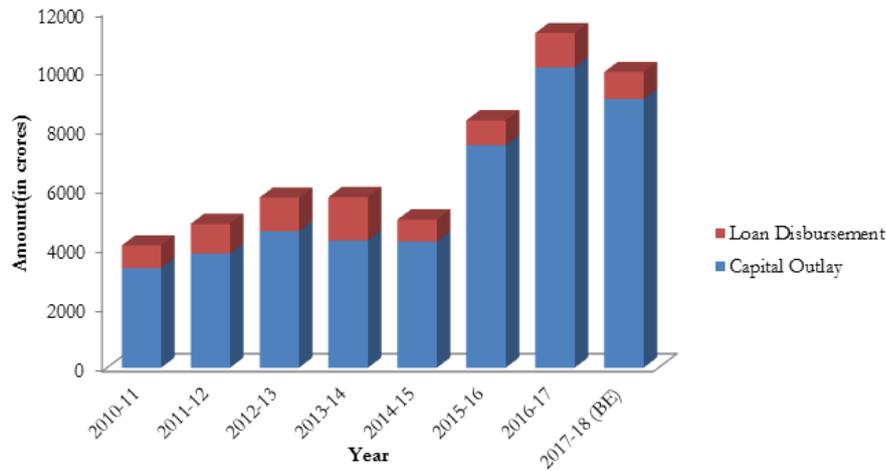
Source: Finance Department, GOK.

Capital Expenditure

Traditionally share of capital expenditure in total expenditure is low. Deficit in resources is the major impediment in infrastructure financing.

Government has therefore adopted alternative policy for financing major infrastructural projects for the sustainable development of the State economy. Alternative development model initiated by the government have already begun to show

Figure 1.8
Trend in Capital Outlay and Loan Disbursement, ₹ in crore



positive signs in attracting long term investment in capital projects.

The share of government spending on capital projects in various sectors has increased during recent years. Substantial increase was noticed in capital outlay of the State during 2016-17, which increased to ₹10,125.95 crore from ₹7,500.04 crore in 2015-16. Capital outlay to GSDP ratio was also increased to 1.64 per cent in 2016-17 from 1.34 per cent in 2015-16. The public works continued to remain the major segment of capital outlay with 27.81 per cent of the total capital outlay in 2016-17 followed by irrigation (6.66 per cent), agriculture and allied activities (5.49 per cent) and industries (5.10 per cent). Details of capital expenditure from 2010-11 to 2017-18 (BE) are given in **Appendix 1.27** and **Appendix 1.28** and trend in capital outlay and loan disbursement are shown in **Figure 1.8**.

Debt Profile

Borrowings which are repayable and on which interest accrues are classified as debt. Debt of the State comprises of internal debt, loans and advances from Central Government and liabilities on account of Small Savings and Provident Fund Deposits, etc. During the last five years market borrowings and accretions in Small Savings and

Provident Fund Deposits are the main source of the State Government to finance the fiscal deficit. Outstanding debt liabilities of the State at the end of 2016-17 were ₹186,453.68 crore. The annual growth rate of debt has increased to the level of 18.48 per cent in 2016-17 from 16.19 per cent in 2015-16. The Debt to GSDP ratio in 2010-11 was 24.24 per cent. In 2016-17, it stood at the level of 30.22 per cent. The ratio of debt in terms of revenue receipts increased to 246.59 per cent in 2016-17 from 227.97 per cent in 2015-16.

The share of internal debt in the total debt liabilities of the State comes to 63.43 per cent in 2016-17. Outstanding debt under internal debt increased to ₹118,268.72 crore in 2016-17 from ₹102,496.26 crore in 2015-16. The growth rate of internal debt in 2016-17 was 15.39 per cent. The liabilities under small savings, PF, etc. come to 32.49 per cent of the total liabilities. The liabilities under Small Savings, Provident Fund etc at the end of 2016-17 were ₹60,571.01 crore. The outstanding liabilities under Loans and Advances from the Centre at the end of 2016-17 were ₹7614.13 crore. The gross and net retention of debt in 2016-17 was ₹28,451.61 crore and ₹16,334.78 crore respectively. Details of debt profile of the State are given in **Table 1.10** and details of receipts and disbursements are given in **Appendix 1.29**.

Table 1.10
Debt of Kerala, ₹ in crore

Year	Internal Debt	Growth Rate (%)	Small Savings, Provident Fund, Others	Growth Rate (%)	Loans and advances from Central Govt.	Growth Rate (%)	Total	Growth Rate (%)
2010-11	48,528.10	11.90	23,786.06	11.69	6,359.08	0.86	78,673.24	10.86
2011-12	55,397.39	14.16	27,625.10	16.14	6,395.69	0.58	89,418.18	13.66
2012-13	65,628.41	18.47	31,310.65	13.34	6,621.78	3.54	103,560.84	15.82
2013-14	76,804.35	17.03	35,542.51	13.52	6,662.21	0.61	119,009.07	14.92
2014-15	89,067.91	15.97	39,307.28	10.59	7,065.05	6.05	135,440.24	13.81
2015-16	102,496.26	15.08	47,639.36	21.20	7,234.71	2.40	157,370.33	16.19
2016-17	118,268.72	15.39	60,571.01	27.14	7,614.14	5.24	186,453.87	18.48
2017-18 (BE)	139,646.01	18.08	58,318.02	-3.72	9,062.78	19.03	207,026.81	11.03

Source: Finance Department, GOK.

The introduction of GST is one of the landmark tax reforms in the post-independent history of India. It is widely presumed that introduction of GST would augment efficiency in economic activities and would benefit the State in the enhancement of indirect tax proceeds, once the technical glitches encountering in the initial phase of introduction of the new tax regime are cleared. The State Government have made laudable interventions in the GST councils time and again to bring in structural changes in the GST system and in the tax rates for getting maximum benefits to the State and also to protect the interest of the consumers. GST is a destination tax and Kerala is a consumer State. Kerala being a consumer State has every reason to hope that, GST would fetch more tax revenue for the State and achieve desired growth of more than 20 per cent in tax revenues in the years to come. Moreover, considering share of service sector in the State GDP, the benefit of GST to the State is expected to be more enormous. Once the current issues in GST system are resolved, State is optimistic about a positive turnaround in its revenue growth and revenue led fiscal consolidation can be restored sooner rather than later. However the implementation of GST has been beset with numerous problems particularly with regard to the IT backbone. Further

numerous rate changes, failure to ensure that the benefits are passed on to the consumers, absence of e-way bill, changes in the threshold and even attempts to tinker with the architecture of GST have brought confusion and popular protest. The State Government has little power to intervene in this situation. Important fallout of GST has been the erosion of taxation powers of the State.

The State government has already succeeded in creating an ambience for attracting large scale investments in major infrastructure projects through innovative financial instruments like Alternative Investment Fund (AIF) Infrastructure Investment Trust (InvIT) and Infrastructure Debt Fund (IDF). For this purpose KIIFB acts as the key SPV for mobilising and channelising resources for various infrastructure SPVs. Genuine efforts are already on the part of government to create an image of Kerala being an investment friendly State. Apart from this, Govt. have launched four mission programmes – Life Mission, Haritha Keralam, Aardram and Comprehensive Educational Rejuvenation Programme – with people's participation and by amalgamating various schemes under socio-economic development sectors. The alternative model adopted for development of infrastructure sector and mission mode programmes would prove

Table 1.11
Outstanding Guarantees, ₹ in crore

Year	Maximum amount Guaranteed	Total Amount outstanding (including principal & interest)
2010-11	12,625.07	7,425.79
2011-12	11,332.11	8,277.44
2012-13	11,482.25	9,099.50
2013-14	12,275.21	9,763.36
2014-15	13,123.30	11,126.67
2015-16	13,712.77	12,438.52
2016-17	20,204.10	16,245.55

Source: Finance Department, GOK

to be the milestone for the multi-dimensional development of the State.

Contingent Liabilities

To overcome the ceiling on fiscal deficit set by the Fiscal Responsibility Act, the State Government is giving guarantees to the borrowings of public sector undertakings and other institutions instead

of funding them directly through Budget. These contingent liabilities become the debt obligations of the State in the event of default by the borrowing public sector units for which Government is a guarantor. The outstanding guarantee in 2016-17 is ₹20,204.10 crore. The outstanding guarantees of the State Government from 2010-11 to 2016-17 are shown in **Table 1.11**.

POVERTY

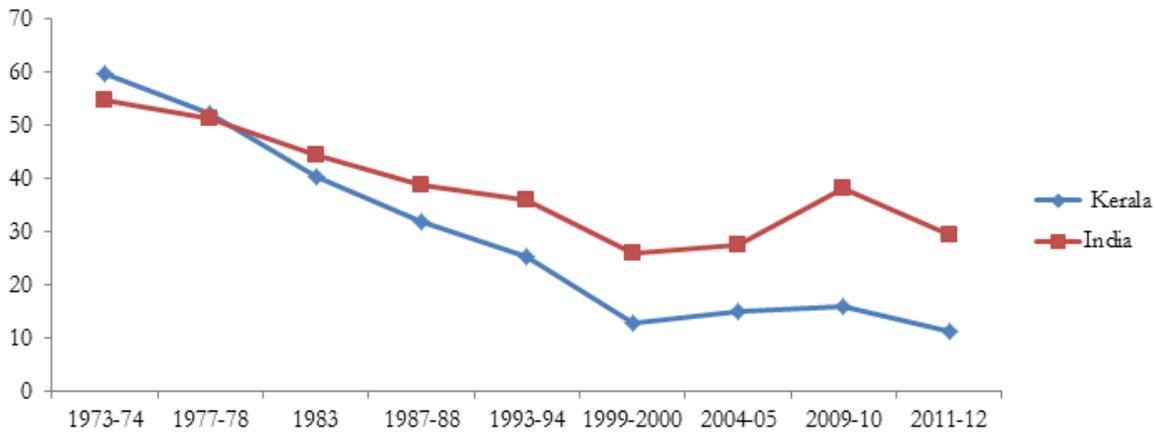
Poverty is a multifaceted concept, which may include social, economic and political elements. Prof. Amartya Sen terms poverty as “not just a lack of money; it is not having the capability to realise one’s full potential as a human being”. The global poverty line set at \$1.90 using 2011 prices estimates that over 900 million people globally lived under this line in 2012. The World Bank estimate shows that one in five Indians are poor and 80 per cent of them are in rural areas. The incidence of poverty is high among the Scheduled Tribes followed by Scheduled Castes. By virtue of the unique development path followed in the State, the poverty index of Kerala shows that only 11.3 per cent of population falls under the poverty line as compared to 29.5 per cent in the country in 2011-12. The success of Kerala in poverty reduction is reflected in the sharp reduction in the proportion of poor both in rural and urban areas.

In Kerala, factors such as land reforms, spread of education, and health care, decentralisation, pension schemes, public distribution system, Kudumbashree, and the consolidated efforts through Plan schemes have played an effective role in reducing the poverty ratios. The absolute poverty rate (as per the Rangarajan report) in Kerala and India from 1973-74 to 2011-12 are given in **Figure 1.9** and **Appendix 1.30**.

Socio Economic and Caste Census (SECC), 2011 was the new exercise conducted by Government of India to identify households living below the poverty line in India. SECC gives a broader and dynamic definition of poverty. SECC estimates the deprivation index based on the following seven criteria.

1. Only one room with kucha walls and kucha roof.

Figure 1.9
Proportion of Poor in India and in Kerala, 1973-74 to 2011-12, in per cent ¹



Source: Planning Commission, GOI, 2014

¹(Rangarajan Committee) Report of The Expert Group to Review the Methodology for Measurement of Poverty, Government of India, Planning Commission, June, 2014

2. No adult member between age 16 and 59.
3. Female headed households with no adult male member between age 16 and 59.
4. Disabled member and no able bodied adult member.
5. SC/ST households.
6. No literate adult above 25 years.
7. Landless households deriving major part of their income from manual casual labour.

According to the SECC (2011) data, out of the 76.99 lakh households in Kerala, 63.19 lakh (82.08 per cent) live in rural areas. Of this, 10.32 per cent are Scheduled Castes households and 1.63 per cent was Scheduled Tribes households. Out of the total rural households, 19.16 lakh (30.33 per cent) rural households are deprived. The highest deprivation rate is seen in Palakkad (42.33 per cent) followed by Thiruvananthapuram (38.36 per cent) and Wayanad (36.33 per cent) districts. And the lowest deprivation rate is seen in Ernakulam (20.30 per cent), Kottayam (23.02 per cent) and Kannur (24.25 per cent) districts. Out of the total rural SC and ST households, 57.66 per cent of Scheduled Caste households and 61.68 per cent of Scheduled Tribe households are included under

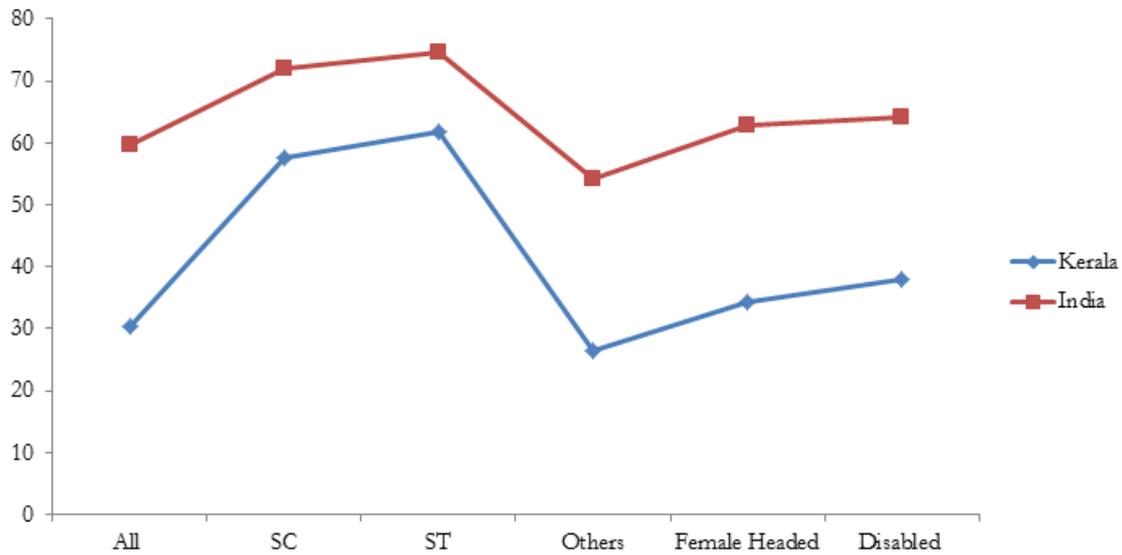
deprived categories. District-wise details about the percentage of deprived rural households in Kerala against their total number of rural household across different categories are given in **Appendix 1.31** and the percentage of deprived rural households in India and Kerala against their total number of rural household across different categories are given in **Figure 1.10**.

District-wise details about the percentage of deprived rural households based on different deprivation index are given in **Appendix 1.32** and the percentage of deprived rural household in Kerala and India based on different deprivation index are given in **Figure 1.11**.

Approach of 13th Five-Year Plan

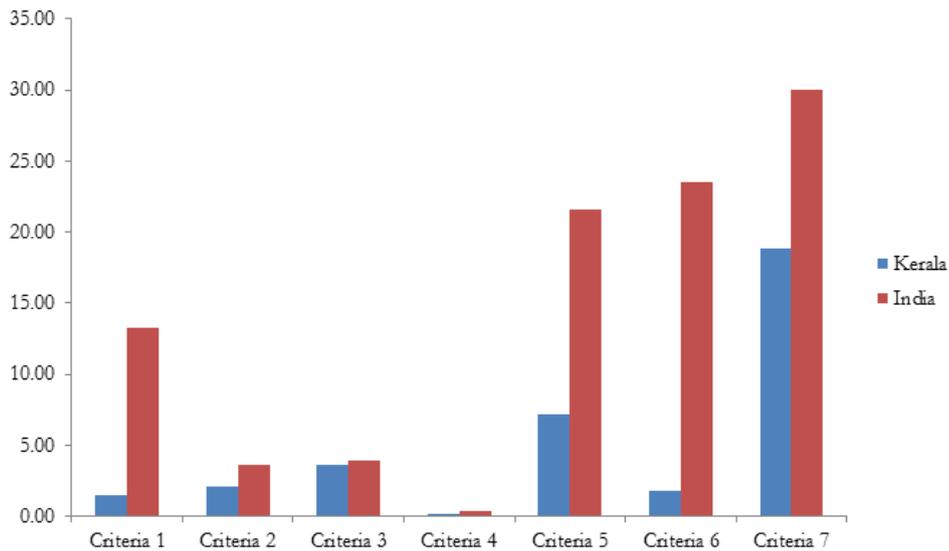
Although the head count ratio (HCR) of poverty was 11.3 in Kerala in 2011-12 as per Rangarajan Committee Estimate, the incidence of absolute poverty is high in some pockets of the State, among the tribes and fisherfolks. Kerala Government is initiating measures for eliminating poverty from the State to make Kerala the first State in India to eliminate absolute poverty. The government will extend full support of its machinery to the local governments to formulate new programmes to expand rural production and eliminate multiple

Figure 1.10
Percentage of Deprived Rural Households in India and Kerala Against Total Number of Rural Household Across Different Categories



Source: Socio Economic and Caste Census (2011).

Figure 1.11
Deprived Rural Households in Kerala and India as per Different Deprivation Indices, in per cent



Source: Socio-Economic and Caste Census (2011).

forms of deprivations, especially where the tribes reside. The State will support local governments' efforts in their core areas of activity, including housing, sanitation, electrification, access to food, healthcare, and insurance, access to school education, employment guarantee, welfare pensions

and special care for the disabled, aged and infirm. A combined effort involving local governments, the Kudumbashree mission, departments of the State Government, people's organisations and individuals will take on the task of eliminating absolute poverty in the State.

Nava Keralam Karma Padhathi (NKKP)

Nava Keralam Karma Padhathi (NKKP) is a new initiative implemented through four innovative Missions in the State for the benefit of the vulnerable sections. Haritha Keralam, Aardram, LIFE and Education Rejuvenation are the four missions. Haritha Keralam is an environment friendly approach, focusing on organic farming, water conservation and waste management. The Mission Aardram aims to create 'People Friendly' Health Delivery System in the State through improving universal healthcare and addressing second generation health care issues. LIFE (Livelihood, Inclusion and Financial Empowerment) Mission aims to provide safe and secure house for all landless and homeless family. Education Rejuvenation Mission aims to take forward the State from universalisation of education to modernisation of education, with

smart classrooms, digital libraries, IT enabled learning and contemporary syllabus.

While Kerala is better off than most other States in terms of average poverty estimates, there are still several pockets of deprivation in the State. Poverty in Kerala is mainly concentrated in some social categories and groups such as scheduled castes, scheduled tribes, fishermen communities, potters and artisans. This points to the need of additional central assistance to support the State programmes and redesigning livelihood programmes in these areas to eliminate absolute poverty from the State. The Scheduled Caste Development Department, Scheduled Tribes Development Department and Fisheries Department are implementing several poverty reduction/livelihood programmes for the upliftment of the people in these communities. Various schemes on poverty reduction have been dealt with in other chapters of this Review.

PRICES

Trend in Prices – All India

Inflation in India, both in terms of CPI-combined (CPI-C) and Wholesale Price Index (WPI) has decreased in recent years. The main trends in inflation during the last few years include secular decline in headline inflation; convergence of CPI and WPI; decline in inflation across commodity groups, notable being food; narrowing of gap between rural and urban inflation; and decline in inflation across State. The general inflation based on different indices in India is shown in **Table 1.12**.

The annual average inflation rate of WPI of all commodities in 2016-17 was 1.7 per cent against (-)3.7 per cent in 2015-16 (Base year 2011-12). Price of primary articles, fuel and power and manufactured products has increased in 2016-

17. On the other hand, Consumer Price index (combined) inflation (Base 2012) for 2015-16 declined to 4.9 per cent from 5.9 per cent in 2014-15. Food inflation based on Consumer Food Price Index (CFPI) declined to 4.9 per cent in 2015-16 from 6.4 per cent in 2014-15. It averaged 5.1 per cent in 2016-17 (April to December) and dropped to 1.4 per cent in December 2016. As per the revised Monetary Policy Framework, the Government has fixed the inflation target of 4 per cent with tolerance level of above or below 2 per cent for the period beginning from August 5, 2016 to March 31, 2021.

The annual rate of inflation, based on monthly Wholesale Price Index (WPI) (Base 2011-12) stood at 3.59 per cent (provisional) for the month of October, 2017 (over October, 2016) as compared to 2.60 per cent (provisional)

Table 1.12
General Inflation Based on Different Indices in India, in per cent

Index	2012-13	2013-14	2014-15	2015-16	2016-17
Wholesale Price Index	6.9	5.2	1.2	-3.7	1.7
Consumer Price Index (Combined)	10.2	9.5	5.9	4.9	4.5
Consumer Price Index (Industrial Workers)	10.4	9.7	6.3	5.6	4.1
Consumer Price Index (Agricultural Labourers)	10.0	11.6	6.6	4.4	4.2
Consumer Price Index (Rural Labourers)	10.2	11.5	6.9	4.6	4.2

Source: Economic Survey 2016-17, Volume 2, Ministry of Finance, Government of India

for the previous month and 1.27 per cent during the corresponding month of the previous year. Build up inflation rate in the financial year so far was 2.03 per cent compared to a build up rate of 3.53 per cent in the corresponding period of the previous year.

The all India inflation rate based on Consumer Price Index (Rural, Urban and Combined, Base 2012) for the month of October 2017 (provisional) as compared to October 2016 is 3.36, 3.81 and 3.58 per cent respectively. The corresponding Consumer Food Price Index for all India Rural, Urban and Combined for the month of October is 1.75, 2.13 and 1.90 respectively.

Trend in prices-Kerala

Wholesale Price Index (WPI)

Wholesale Price Index in Kerala has increased for both food and non-food crops. WPI of food crops has increased to 9,837.63 in August 2017 from 8,033.23 in August 2016. Since 2012, WPI of food crops has exhibited an increasing trend. Among food crops, price of rice and fruits and vegetables has increased by 20.5 per cent and 28.9 per cent respectively. WPI of the non-food crops has increased to 6,772.31 in August 2017 from 5,841.01 in August 2016. Wholesale Price index of oil and oil seeds increased from 6,691.80 in August 2016 to 7,919.75 in August 2017, showing

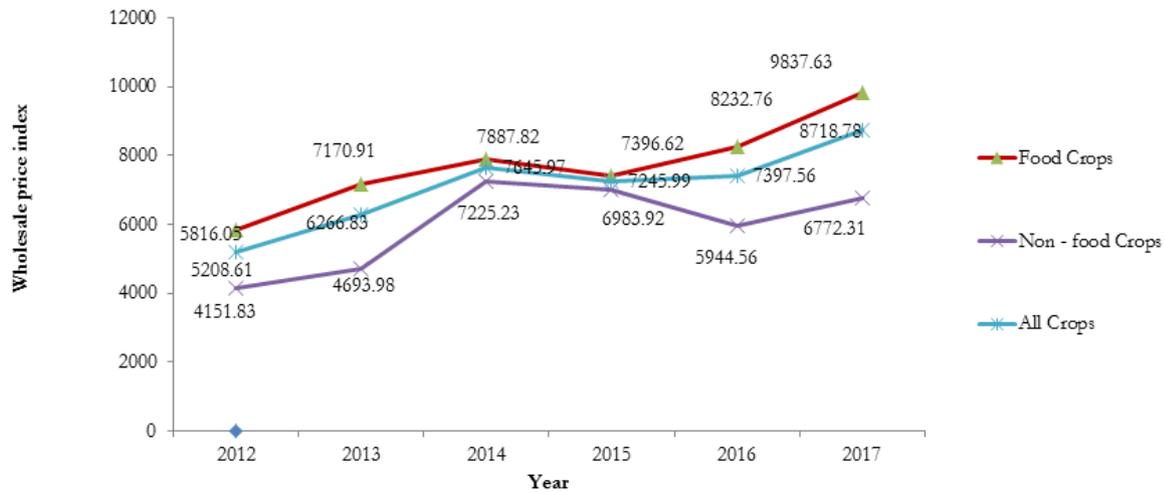
a percentage variation of 18.4 per cent. Altogether, WPI of all crops including food and non-food crops has increased sharply in August 2017 over the previous years. The WPI in 2016 (up to August) was 7,233.07. The index has increased to 8718.78 as of August 2017. About 20.5 per cent hike has been registered in August 2017 over the same period of previous year. Wholesale Price index of all crops during the period from 2012 to 2017 is given in **Appendix 1.33** and **Figure 1.12**

Month wise Wholesale Price Index of Agricultural Commodities in Kerala reveals that there was an increase in index for non-food crops and a decline in index for food crops in August 2017 from July 2017. The index for rice, fruits and vegetables, condiments and spices registered a decline in August 2017 as compared to July 2017 while the index for molasses and oilseeds registered an increase during the corresponding period. However, compared to January 2017, index of most of the commodities registered an increase in August 2017 except fruits and vegetables and plantation crops. A detailed month wise Wholesale Price Index of agricultural commodities for 2016 and 2017 (upto August) is summarised in **Appendix 1.34**.

Consumer Price Index (CPI)

The annual average Consumer Price Index (Base 1998-99=100) in Kerala was estimated at 292.1 in 2016 against 277.3 in 2015. The percentage

Figure 1.12
Wholesale Price Index of Agriculture Commodities

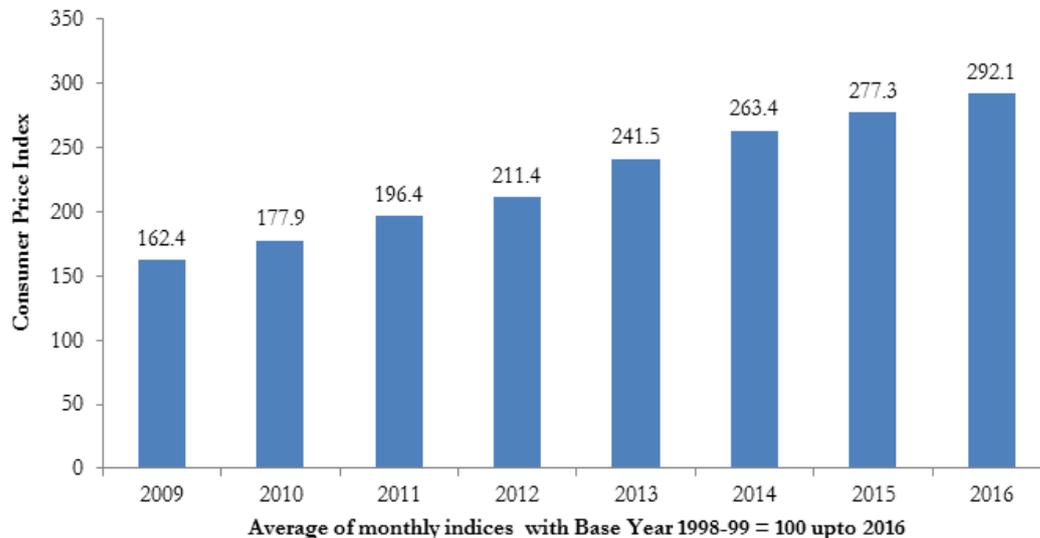


variation in 2016 over 2015 was 5.325 per cent. The base year of CPI has been modified to 2011-12=100 and data from 2016 is available with the new base. The CPI in 2016 with new base year is 143.29 while the CPI in 2017 (up to July 2017) is 149.34.

Centre-wise analysis of CPI indicates that, during 2017, Pathanamthitta district had highest CPI of 156.86 against 152 in the year of 2016 followed by Kannur (155.14) and Chalakkudi (153.57). While

analysing the trend of inflation in Kerala during 2017, the highest rate of inflation was experienced in Malappuram (5.27 per cent) followed by Ernakulam (5.10 per cent) and Kottayam (5.06 per cent). The percentage variation was lowest in Kasaragode (2.8 per cent). The centre-wise Annual Average Consumer Price Index and percentage of variation is shown in **Appendix 1.35**. The annual average Consumer price Index number from 2009 to 2016 (Base Year 1998-99=100) is shown in **Figure 1.13**.

Figure 1.13
Annual Average Consumer Price Index in Kerala



Retail Prices

Price of essential commodities have been showing a rising trend during 2017. The price of 1 kg rice (Matta) in January 2017 was ₹37.82 and it increased to ₹44.02 in September 2017, an increase of 16 per cent. Price of various brands of coconut oil increased between 27 per cent to 44 per cent between January 2017 to September 2017. Price per Coconut has increased to ₹20 in September 2017 from ₹15 in January 2017. Price fluctuation was observed in case of fruits and vegetables. Price of big onion per kg in January 2017 was ₹18.43. However, after a decline in prices in February, it started increasing from June and reached to ₹33 in August 2017. Price of per kg small onion increased by 245 per cent from ₹33 in January 2017 to ₹114 in June 2017 and thereafter decreased to ₹97.95 in September 2017. Monthly State average retail prices of essential commodities from January 2017 to September 2017 is given in **Appendix 1.36**.

Price Parity

The parity index has been estimated at 59.83 in 2016 lower than the index in 2014 and 2015. The value in 2014 and 2015 were 72.08 and 63 respectively. In 2015, the index of farm cultivation cost increased from 2014, whereas the index of prices received by farmers decreased during that period. Cost of farm input, fertilizer, transportation cost, wage of labour have increased whereas there has not been a commensurate growth in farm income. During 2016, index of price received by farmers was (income) 7730.75 and their index of the farm expenses was 12936.25. During 2017 (as of May) price index of income of the farmers has increased only to 8887.6 against the farm expenses of 13323.20 and the parity was 66.6. The Yearly Average Index Number of Prices received and price paid by farmers is shown in **Appendix 1.37**.

Wages

Average Daily Wage Rates of skilled workers in the agriculture sector has increased in 2016-

17 over the previous years. Daily wage rates of Carpenter and Mason have increased to ₹792.83 and ₹789.50 from ₹746.17 and ₹753.08 in 2015-16 respectively. In terms of percentage, the daily wage rate of carpenter has increased by 6.2 per cent in 2016-17 and that of mason has increased by 4.81 per cent in 2016-17. The average daily wage rate of skilled workers in agriculture sector from 2005-06 to 2016-17 is given in **Appendix 1.38**.

The wage rate of unskilled workers in the unorganised sectors both male and female has increased to ₹608.29 (3.7 per cent increase) and ₹447.85 (6.07 per cent increase) in 2016-17. Even though wage rate has increased since 2005-06, female paddy field workers are getting low wages as compared to their male workers. The average daily wage rates of unskilled workers in agriculture sector from 2005-06 to 2016-17 is given in **Appendix 1.39**.

Price Control Mechanism

State and Central governments monitor price situation on a regular basis and have taken measures to control inflation. State Government has built up effective Public Distribution System, Horti crop shops, Consumer fed, Supplyco, etc. for distributing essential commodities at the subsidised rate to the people. State Government also imported rice from Andhra Pradesh to meet the scarcity of rice in domestic market and supplied it at affordable price. Government of India also took measures such as creating buffer stock of pulses through domestic procurement and imports, reducing import duty on potatoes, wheat and palm oil; and allowing duty free import of 500,000 tonnes of raw sugar to enhance domestic availability to contain inflation.

BANKING

Banks are the dominant financial intermediaries in developing countries. Bank deposits form a preponderant portion of the financial savings of the house hold sector, and bank credit is the most important source of finance.

Bank Branches

The Banking group-wise branch network in Kerala as per State Level Bankers Committee (SLBC) data the total number of bank branches as on March 2017 is 7,312. Of the total number of branches, 62 per cent of the branches are in semi-urban areas, 31 per cent of the branches are in urban areas and there are only 7 per cent of the total bank branches in the rural areas. The data of banking group wise branch network is given in **Table 1.13**. Despite being a small State, Kerala has an extensive bank network and accounts for 4.6 per cent of the total scheduled commercial bank branches operating in the country. Kerala has a total of 6,337 scheduled commercial bank branches as on March 2017 as against 6,166 bank branches as on March 2016. During the period 2016-17, 171 new branches were opened in the State. The total number of bank branches increased to 6,376 by the end of June 2017. In terms of number of branches, Kerala has the largest number of bank branches among the semi-urban areas in the country (**Appendix 1.40**).

The number of ATMs in the State has increased from 8,966 in March 2016 to 9,182 in March 2017.

Deposits

As per SLBC data, the total bank deposits (includes Public Sector Banks and Private Sector Banks) in Kerala as on March 2017 is ₹410,492 crore which is 13.52 per cent increase over 2015-16. Out of this, ₹258,143 crore is domestic deposit and ₹152,349 crore is NRI deposit. The growth rate in domestic deposit is 14.23 per cent as compared to 7.46 per cent in 2015-16 and the growth rate of NRI deposit is 12.34 per cent as compared to 23.73 per cent in 2015-16. Domestic deposit constitutes 63 per cent of total deposits of the State. The major share of deposit comes from domestic deposit. (**Appendix 1.41**) The growth of bank deposits in Kerala is shown in **Figure 1.14**.

Deposits in Scheduled Commercial Banks

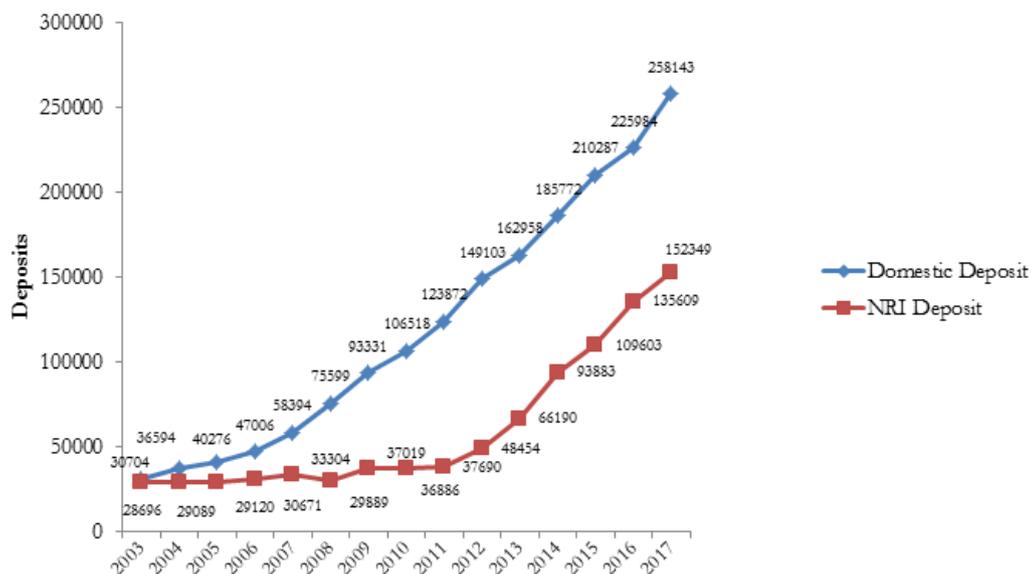
As per RBI data, the total bank deposits in scheduled commercial banks (includes SBI and its associates, nationalised banks, Private sector banks, foreign banks, regional rural banks and small finance banks) in Kerala in 2016-17 has increased by 13.48 per cent to ₹412,503 crore as

Table 1.13
Banking Group-wise Branch Network in Kerala

Banking Group	Number of Branches				
	Rural	Semi-urban	Urban	Total	Percentage
State Bank Group	77	967	326	1370	18.74
Nationalised Banks	101	1545	609	2255	30.84
RRB	51	525	39	615	8.41
Private Sector Bank	148	1469	475	2092	28.61
Co-operative Bank	135	26	819	980	13.40
Total	512	4532	2268	7312	100

Source: State Level Bankers Committee, Kerala, March 2017

Figure 1.14
Growth of Bank Deposit in Kerala from 2003-2017



Source: SLBC, March 2017

compared to ₹363,511 in 2015-16. Among the major States, Maharashtra has the highest share of deposit (20.12 per cent) out of the total deposit in the country. The share of deposits in scheduled commercial banks in Kerala to the total deposits in scheduled commercial banks in the country as on March 2017 is 3.84 per cent (**Appendix 1.42**) and as on June 2017 is 3.90 per cent. The national average growth rate of deposits has increased by 11.30 per cent in 2016-17 as compared to growth of 8.65 per cent in 2015-16.

NRI Deposits

The large-scale migration of Malayalis to the Gulf region and the remittances sent by them has played a significant role in the economic development of the State. According to the data furnished by SLBC, the total NRI deposit in public sector banks in Kerala (as on March 2017) was ₹83,855 crore and in private sector banks was ₹68,493 crore. The erstwhile State Bank of Travancore had the second largest deposit with ₹34,461 crore and the total State bank group has NRI deposits worth ₹51,073 crore. The inflow of NRI deposits increased by 12 per cent from ₹135,609 crore in March 2016 to ₹152,349 crore in March 2017. NRI deposits

increased to ₹154,252 crore as on June 2017. Domestic deposits grew by 14 per cent to ₹258,143 crore in March 2017 as against ₹225,984 crore in March 2016. The Federal Bank attracts more NRI deposits than the other public and private sector banks. The percentage share of the NRI deposit is 55.04 per cent in public sector banks and 44.96 per cent in private sector banks. The State bank group attracts 33.52 per cent and nationalised banks get 21.06 per cent of the total remittance (**Appendix 1.43**).

Advances

According to SLBC banking statistics, as on March 2017, Banks in Kerala including the commercial banks and co-operative banks disbursed ₹298,092 crore as advances as compared to ₹269,201 crore in March 2016. In the disbursement to total advances, private sector banks stood at the top most place disbursing ₹90,032 crore in March 2017 which was ₹80,247 crore in 2016 in March. Nationalised banks disbursed ₹83,886 crore followed by State Bank Group with ₹68,415 crore and Co-operative banks with ₹42,018 crore respectively during March 2017. As of June 2017 (i.e. after

the merging of SBI with its 5 associates) public sector banks disbursed an amount of ₹162,405 crore followed by Private Sector banks (₹98,728 crore) and co-operative banks (₹42,673 crore).

Advances for Agricultural Purpose

The bank group-wise disbursement of agricultural advances show that total agricultural advance including co-operative banks as on March 2017 reached ₹68,787 crore which was ₹60,921 crore in March 2016. The percentage of agricultural advance to total advance has reached 23 per cent. The bank group wise analysis shows that as on March 2017, Regional Rural Bank provides the highest agricultural advances (61 per cent) out of its total advances followed by nationalised banks (29 per cent) and private sector banks (18 per cent). The major State-wise advances financed by Scheduled Commercial Banks is given in the **Appendix 1.44**.

Advances to SC/ST and Weaker Section

An amount of ₹4,549 crore and ₹1,172 crore was disbursed to SC and ST persons respectively in March 2017 in the State by various banks including private sector banks. In the previous year as on March 2016, an amount of ₹4,437 crore and ₹1048 core was disbursed to SC and ST persons respectively. Compared to the previous year there is a 2.52 per cent increase in the advances given to Scheduled Caste and 11.83 per cent increase in the advances given to Scheduled Tribe persons. The bank group-wise advances given to SC and ST are given in **Table 1.14**.

As per SLBC data, in March 2017, ₹63,877 crore has been disbursed to weaker sections in the State. Corresponding figure in March 2016 was ₹54,243 crore indicating nearly 18 per cent growth in the amount sanctioned to weaker sections.

Housing loans

As per SLBC data (March 2017), banks in Kerala including commercial banks and co-operative banks sanctioned ₹37,644 crore to 731,427 beneficiaries as housing loan against ₹33,728 crore to 772,781 beneficiaries during March 2016. There was a 11.61 per cent growth in total housing loan sanctioned. As on March 2017, State Bank Group disbursed ₹15,269 crore to 207,885 beneficiaries. While nationalised banks released ₹9,663 crore to 168,097 beneficiaries, regional rural banks disbursed ₹1,922 crore to 44,301 beneficiaries. Private sector banks disbursed ₹3,676 crore to 58,546 beneficiaries and co-operative Banks disbursed ₹7,114 crore to 252,598 beneficiaries. The share of beneficiaries to total is highest in co-operative Banks (34.53 per cent) followed by State Bank Group (28.42 per cent) and other nationalised banks (22.98 per cent). SLBC data reveals that State Bank Group has disbursed the major share of housing loans (40.56 per cent) followed by other nationalised banks (25.67 per cent) and co-operative banks (18.90 per cent). After the amalgamation of associate banks with SBI, as on June 2017, public sector banks disbursed the major share of housing loans (70.39 per cent) followed by co-operative banks (20.06 per cent) and Private sector banks (9.54 per cent).

Table 1.14
Banking Group-wise Details under SC/ST Advance as on March 2017, ₹ in crore

Bank	SC Advances		ST Advances	
	Number	Amount	Number	Amount
State Bank Group	197,967	3,604	59,785	879
Nationalised Bank	72,074	693	17,726	201
RRB	26,196	143	14,106	77
Private sector bank	8,819	109	964	15
Total Commercial Banks	305,056	4,549	92,581	1,172

Source: State Level Bankers Committee, Kerala 2017

Educational Loan

It is observed that at the end of March 2017, ₹8,995 crore was sanctioned to 369,041 students as educational loan against ₹9,441 crore to 363,355 students during March 2016. This shows that there is a substantial decrease in the sanctioning of education loan during 2017. SLBC banking statistics reveals that State Bank Group disbursed ₹2,320 crore to 108,567 students. The nationalised banks disbursed ₹4,654 crore to 177,576 students which accounted for 52 per cent of the total educational loan disbursed by all banking groups in the State. Regional Rural Banks disbursed an amount of ₹856 crore to 32,738 students, private sector banks disbursed ₹1,074 crore to 45,702 students and the Co-operative banks disbursed an amount of ₹91 crore to 4,458 students as education loan during March 2017. The percentage share of educational loan NPA in total outstanding education loan during 2017 increased to 13 per cent. As on June 2017, ₹9,267 crore was sanctioned to 350,153 students.

Micro Finance

Commercial banks, Regional Rural Banks (RRBs), cooperative societies and other large lenders have played an important role in providing refinance facility to micro finance institutions (MFIs). Micro finance institution serves as a supplement to banks. These institution not only offer micro credit but they also provide other financial services like savings, insurance, remittance and non-financial services like individual counseling, training and support to start own business in a convenient way. It is a boon for those who do not have access to regular banking services. As per SLBC statistics, in Kerala, more than ₹2.70 lakh self help groups (SHGs) maintain their savings bank account with ₹1,504 crore in various banks as on March 2017.

The bank group-wise data shows that Nationalised Banks attracts more accounts (50.5 per cent) followed by RRBs (21 per cent), Private sector banks (18.8 per cent) and State Bank Group (9.7 per cent). In terms of deposits of SHGs,

Box 1.1

Education Loan Repayment Support Scheme

A Scheme for providing government support to those who find it extremely difficult to repay the educational loan debts after the completion of their course was announced in the Budget 2016-17 and 2017-18. The scheme envisages government support to those who availed education loan for a relief period of four years after the repayment holiday. Under this scheme, education loans sanctioned to students are classified into two categories namely.

1. Education loan non-NPA/standard account and
2. Education loan turned to NPA account on or before March 31, 2016.

Annual repayment amount (Principal plus interest) will be shared between the government and the borrower in the specified ratio during the 4 year relief period for the first category. In the case of second category, Government will assist the borrower to settle and close the loan account by paying specified amount as per eligibility.

The scheme would be adopted by all Scheduled Commercial Banks/Co-operative banks and would be applicable only for the recognised Technical/Professional courses in India. Financial support under this scheme shall be available to loans with sanctioned limit up to ₹9 lakh. SLBC will be the nodal agency for the smooth implementation of 'Education Loan Repayment Support Scheme'.

Source: G.O(P) No.65/2017/Fin dated 16/05/2017

nationalised banks attract 72.74 per cent of total SHG deposits. The deposit shares of SHG in the State Bank Group, RRBs and private sector banks was 3.66 per cent, 4.72 and 18.88 per cent respectively.

Credit-Deposit Ratio

The credit-deposit (CD) ratio of banking sector in India of Scheduled Commercial Banks at the end of March 2017 was only 73.73 per cent. It was 77.86 in March 2016. Among the major States, Tamil Nadu has the highest CD ratio (106.55 per cent) followed by Maharashtra (106.28 per cent) and Andhra Pradesh (100.21 per cent). As on March 2017, the CD Ratio in Kerala of scheduled commercial banks is only 59.71 per cent which is lower than the 61.84 per cent in the previous year (**Appendix 1.45**). According to the RBI quarterly statistics, by the end of June 2017, the total

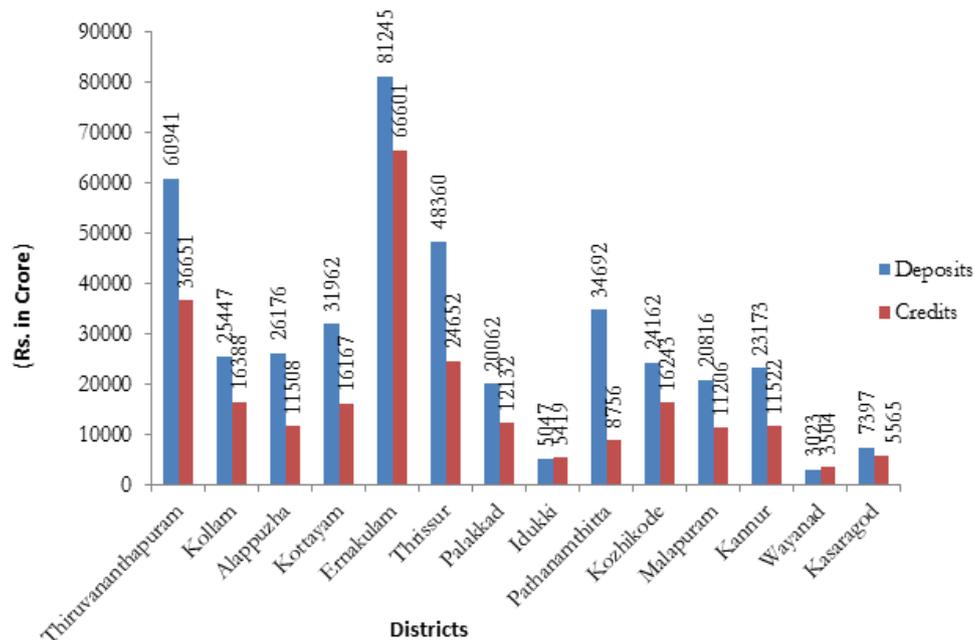
deposits of scheduled commercial banks in Kerala is ₹419,839 crore and total credits is ₹249,529 crore, that is CD Ratio of 59.43 per cent.

The CD Ratio of banking sector in India of public sector banks in India by the end of March 2017 is 69.64 per cent. It was 74.68 per cent in March 2016. Among the States, Maharashtra has highest CD Ratio (109.20 per cent) followed by Telangana (106.35 per cent) and Tamil Nadu (105 per cent). The CD Ratio of public sector banks in Kerala is 63.04 per cent. In March 2016, it was 67.09 per cent. (**Appendix 1.46**).

District-wise Analysis of Banking Statistics

The district-wise analysis of banking statistics reveals that Ernakulam has the highest number of branches (999) followed by Thrissur (733) and

Figure 1.15
District-wise Distribution of Deposits and Credit of Scheduled Commercial Banks in Kerala as on March 2017, ₹ in crore



Source: Reserve Bank of India, Quarterly statistics on deposits and credit of Scheduled Commercial Banks, March 2017.

Box 1.2

SBI merger with five Associate banks

The Union Cabinet on June 15, 2016 approved the merger of the five subsidiaries of State Bank of India (SBI) with the parent, as the Indian banking system moves into a phase of consolidation. The merger of Associate Banks as well as Bharatiya Mahila Bank with SBI, results in the first ever large-scale consolidation within the Indian banking industry. Merger of SBI with its 5 associates namely State Bank of Bikaner and Jaipur (SBBJ), State Bank of Mysore (SBM), State Bank of Travancore (SBT), State Bank of Hyderabad (SBH), State Bank of Patiala (SBP) and Bharatiya Mahila Bank took place on April 1, 2017.

In Kerala, after the merger of 5 Associate banks and Bharatiya Mahila Bank, State Bank of India has 22 per cent branch network in Kerala with 1313 branches as on October 31, 2017. The market share of deposits in Kerala has increased from 11.60 per cent to 32.74 per cent and that of advances has increased from 10.60 per cent to 25.82 per cent after the merger.

The total number of SBI/Associate banks/BMB branches and ATM counters relocated/rationalised in connection with SBI and Associates merging is given in **Appendix 1.48**. The District-wise number of branches and ATMs as on October 31, 2017 is given in **Appendix 1.49**.

Source: State Bank of India Annual Report 2016-17

Thiruvananthapuram (725). The lowest number of branches is in Wayanad (121). In Kerala CD ratio of Wayanad (115.91 per cent) and Idukki (107.37 per cent) remain high. Among the districts Pathanamthitta is at the bottom with CD ratio of 25.24 per cent (**Appendix 1.47**). In Kerala, the share of deposits is more in Ernakulam district. District-wise distribution of deposits and credits of scheduled commercial banks in Kerala as on March 2017 is shown in **Figure 1.15**.

Co-operative banking sector in Kerala

Kerala State Co-operative bank is the apex bank of the short term credit in Kerala. Also it acts as a central balancing centre to absorb surplus funds of District Cooperative Banks, Primary Agricultural Cooperative Societies (PACS) and other Cooperative institution. According to SLBC data for March 2017, out of a total of 7,312 branches, 980 branches are

in the co-operative banking sector. Of the total 980 branches 135 are in rural, 26 are in semi-urban area and 819 are in urban area.

The total deposits of commercial and co-operative Banks as on March 2017 was ₹474,626 crore. The deposits of co-operative banks as on March 2017 were ₹64,134 crore, which is 13.51 per cent of the combined deposits of commercial banks and co-operatives. The total advances from both commercial banks and co-operatives in the State was ₹298,093 crore in March 2017. Out of total advances of ₹298,093 crore the share of cooperatives is ₹42,018 which accounts for 14.10 per cent of the total advances of the State. The total agricultural advances in the State as on March 2017 was ₹68,787 crore and the share of co-operatives is ₹7,330 crore (10.66 per cent). The total banking business in the State was ₹690,528 crore in March 2016 which increased to ₹772,718 crore in March 2017. (**Table 1.15**).

Table 1.15
Performance of Co-operative Sector

Parameter	March 2017			Share of co-operative to Total (%)
	Co-operative Sector	Commercial Banks	Commercial Bank and Co-operative Bank	
Branches	980	6,332	7,312	13.40
Total Deposits	64,134	410,492	474,626	13.51
Total Advances	42,018	256,075	298,093	14.10
Total Business	106,152	666,566	772,718	13.74
Priority sector advances	26,366	142,102	168,468	15.65
Agriculture Advances	7,330	61,457	68,787	10.66
SME Advances	963	39,408	4,0371	2.39

Source: - State Level Bankers Committee, Kerala 2017

Box 1.3 **Kerala Co-operative Bank**

The re-structuring of short term Cooperative Credit structure in Kerala was announced by the Hon'ble Governor of Kerala on June 24, 2016 in the Kerala Assembly. The Government of Kerala appointed an Expert committee headed by Professor M.S. Sriram, Indian Institute of Management Bangalore, to explore the possibilities of merging the 14 District Co-operative Banks and Kerala State Cooperative Bank into a single entity. The Expert Committee submitted its report suggesting the merger of 15 banks together to form a technologically, high profile modern bank which will be able to cater to the needs of the youth. All modern banking facilities including Forex business shall be made available through the 820 branches of Kerala Co-operative Bank.

Government has appointed a task force for the formation of Kerala Co-operative Bank consisting of a Chairman and 3 member's one each for Banking, IT and HR and Co-operation. The task force has started functioning and the process of integration is on the wheel. It is expected that the "Kerala Co-operative Bank" will be able to start functioning w.e.f "Chingam Onnu" (1st of Chingam), 2018.

The vision for the new bank is "Safe and Reliable Banking for everybody" and the Mission is "to be the most accessible, friendly and safe banking service for the common citizen of Kerala providing a comprehensive end to end and enriching financial services for carrying out life and livelihoods with dignity."

The proposed Kerala Co-operative Bank (KCB) is envisaged as a modern bank for the common people of Kerala including farmers, women, younger generation, small and micro entrepreneurs, non-resident Indians etc. The Kerala Cooperative Bank formed will be a full service universal bank in the cooperative sector. The core of its service would be to the Primary Agricultural Co-operative Societies (PACS) and its members. The new bank will strive to serve all segments of the society and would be an institution that instills the pride of Kerala and all that Kerala represents. It will be "a peoples own bank." The bank shall be offering all traditional and modern banking products and services to the people of the State at affordable cost.

It may be said without doubt that the co-operative banking system in Kerala plays an important role in serving the people and support the rural economy of the State. The prime motive behind the concept of Kerala Bank will be to serve the growing needs of funds for the growth and development of the State.

The new bank will have a professional Board of Directors, consisting of 22 members with an experienced banker as the Chief Executive Officer, 14 representatives of PACS (one member from each district with minimum qualifications prescribed), two members representing Apex Cooperative Societies, three representatives from domain/subject experts by adopting fit and proper criteria, two ex-official representatives one each from NABARD and Department of Cooperation, Govt. of Kerala. No Regional Boards are suggested.

The headquarters of the new bank shall be at Thiruvananthapuram and it shall have 7 regional offices, one covering two districts, headed by regional managers, with adequate sanctioning powers. The regional offices shall have a dedicated team to hand hold the PACS under their jurisdiction by assuming the role of a mentor. The present network of branches of the entities to be merged shall continue.

Co-operative Banking is presently maintaining a three-tier system. This consists of “Kerala State Cooperative Bank” on the top level, “District Co-operative Banks” on the second level followed by “Cooperative Banks and Societies” on the lower level. After the formation of Kerala Bank this will be converted to a two-tier system.

Source : Kerala Co-operative dept. and Expert Committee Report on Formation of Kerala Bank

ANNUAL PLAN 2017-18

Consequent to the inception of Niti Aayog at the Centre, Government of India abolished the planning exercises by way of Five-Year Plans. However, Government of Kerala has resolved to proceed with the Five-Year Plan and hence, the State Planning Board has initiated steps for the formulation of 13th Five-Year Plan (2017-22) in the State. Accordingly, 43 working groups involving more than 700 members - scholars, administrators, social and political activists and other experts were constituted. Based on reports of the working groups, an Approach Paper of the 13th Five Year Plan was published. The Plan document will be released soon.

Being the 1st year of the 13th Five-Year Plan, Annual Plan 2017-18 was launched in the State. Scrupulous compliance of guidelines and appraisal of all ongoing schemes were ensured. Unwanted or non-productive programmes existed, if any, have been discarded and in view of better coherence, schemes of same or common nomenclatures were merged. New schemes have been incorporated on a priority basis as announced in the Budget.

In the Annual Plan (2017-18), the aggregate outlay was ₹34,538.95 crore which includes the State Plan of ₹26,500 crore and Central Assistance of ₹8,038.95 crore. The total State Plan outlay for

Table 1.16
Annual Plan 2016-17 and 2017-18 Sector-wise Outlay Comparative Statement, ₹ in crore

Sl.No.	Sector	2016-17			2017-18			% of increase over 2016-17
		Outlay	CSS	Aggregate	Outlay	CSS	Aggregate	
1	2	3	4	5	6	7	8	9
I	Agriculture and Allied activities	1,332.66	347.48	1,680.14	1,571.65	408.38	1,980.03	17.85
II	Rural Development	844.76	2,733.66	3,578.42	973.72	3,522.71	4,496.43	25.65
III	Special Area Programmes	478.98		478.98	404.02		404.02	-15.65
IV	Irrigation and Flood Control	491.47	86	577.47	676.21	86.02	762.23	31.99
V	Energy	1,622.70		1,622.70	1,629.29		1,629.29	0.4
VI	Industry and Minerals	658.93		658.93	888.77		888.77	34.88
VII	Transport	1,564.98		1,564.98	1,735.08		1,735.08	10.87
VIII	Science, Technology and Environment	881.44	72.50	953.94	994.89	68.10	1,062.99	11.43
IX	General Economic Services	3,095.83	84.34	3,180.17	2,383.71	32.08	2,415.79	-24.03
X	Social Services	7,447.43	3,192.19	10,639.62	8,929.16	3,885.66	12,814.82	20.44
XI	General Services	80.82	18	98.82	86.00	36.00	122.00	23.45
	Total – I to XI	18,500.00	6,534.17	25,034.17	20,272.50	8,038.95	28,311.45	13.09
XII	LSGD	5,500.00		5,500.00	6227.50		6,227.50	13.23
	Grand Total	24,000.00	6,534.17	30,534.17	26,500.00	8,038.95	34,538.95	13.11

2017-18 was ₹26,500 crore, reflecting an increase of 10.42 per cent over the previous financial year's outlay of ₹24,000 crore. Out of the State Plan outlay, ₹6,227.50 crore was earmarked for assistance to LSGIs and the remaining ₹20,272.50 crore was for State sector schemes. ₹2,599.65 crore was allocated to Special Component Plan and ₹751.08 crore was to Tribal Sub Plan. An outlay of ₹1,552 crore was proposed for the Major Infrastructure Development Projects. Around 11.4 per cent of State Plan outlay was exclusively earmarked for the benefit of girls/women.

The sector wise comparative statement on the outlays of Annual Plan 2016-17 and 2017-18 is given in **Table 1.16**.

Digitalisation of Monitoring Mechanism

1. Planspace – District Roll Out

As a measure to strengthen the Plan Monitoring and Evaluation Mechanism in the State, a software called “PLANSPLACE – System for

Progress Analysis and Concurrent Evaluation” was developed by the State Planning Board with the technical support of IIITM-K. It is a web based online management information system that can monitor and evaluate the progress of implementation of each and every Plan Scheme across all departments in the State on a real time basis.

The system captures the relevant details about a Plan scheme/project, its various components, physical/financial progress and implementation status at different levels and generates dynamic, customised reports for various stakeholders. By providing real time information, the system acts as a supporting tool for the Government, State Planning Board, Head of Departments, Secretaries and various departments to facilitate and improve the planning and decision making process. The Annual Plan proposals for the year 2017-18 were received online from Heads of departments and implementing agencies through Planspace. The system was also integrated with the Treasury Information System.

With a view to strengthen the District Level Plan Monitoring System, Planspace has been rolled out to all the Districts in the State during 2015-16. The system enables implementing officers at district and sub district levels to directly input data into the system, thus further enhancing its accuracy and timeliness. The integration of district level data to State level was done in 2017-18. As per the information available on Planspace, during the current financial year the total Plan expenditure is 33 per cent as on September 30, 2017 that is expected to improve substantially by the end of the financial year.

2. MLASDF Monitoring Software

A software has been developed to improve the monitoring mechanism of various schemes implemented under MLASDF at District-level. It can capture information at any stage of implementation of works, right from the proposal by the MLAs to handing over the assets created

to the local bodies concerned. Once the system becomes online, all proposals from MLAs, and issuance of Administrative Sanction, etc could be undertaken in a time bound manner. District-level trainings have been imparted to the implementing officers as part of introducing the MLASDF monitoring system in districts.

02 CHAPTER

AGRICULTURE AND ALLIED SECTORS



AGRICULTURE AND ALLIED SECTORS

AGRICULTURE

Agriculture in Kerala

While the agriculture sector in Kerala has much potential, it is facing many challenges with regard to growth. According to data from the Directorate of Economics and Statistics (DES), the year-on-year growth rate of agriculture and allied activities were (-) 3.1 per cent in 2012-13, (-) 3.8 per cent in 2013-14, 0.75 per cent in 2014-15, and (-) 7 per cent in 2015-16. Thereafter, the sector witnessed growth of 2.5 per cent in 2016-17. The share of Agriculture and allied sectors in total GSVa of the State has also declined from 13.7 per cent in 2012-13 to 10.5 per cent in 2016-17 (**Table 2.1**).

MONSOON, 2017

Kerala is characterised by the existence of a series of micro-environments suited to diverse kinds of agriculture and related activity. It is our task to translate the potential of Kerala's biodiversity into incomes for our people. Classification of seasons of Kerala is shown below (**Table 2.2**).

The realised rainfall during south west monsoon season (June to September), "Kalavarsha" 2017 over the country as a whole was 95 per cent of Long Period Average (LPA) and it was in the normal (90-100 per cent of LPA) category. The seasonal rainfall over three of the four geographical

Table 2.1
Share of Agriculture and Allied Sectors in GVA at the National and State level
(Constant Prices, Base 2011-12)

Sl. No	Year	Share of Agriculture and allied sectors in Total GVA (India)	Share of Agriculture and allied sectors in GSVa (Kerala)
1	2012-13	17.8	13.7
2	2013-14	17.7	12.36
3	2014-15	16.5	11.91
4	2015-16	15.4	10.85(P)
5	2016-17	NA	10.58(Q)

(P) Provisional, (Q) Quick

Source: National Accounts Statistics 2017 and Directorate of Economics and Statistics,

Table 2.2
Classification of Seasons of Kerala

Sl. No	Seasons	Duration
1	Wet season a. Kalavarsha (South West Monsoon) b. Thulavarsha (North East Monsoon)	June to September October to November
2	Dry Season (Winter)	December to February
3	Hot Season (Summer)	March to May

Table 2.3
Southwest Monsoon (June to September) 2017 rainfall

Region	Long Period Average (mm)	Actual Rainfall (mm)	Rain fall % of LPA
All India	887.5	841.3	95
Northwest India	615	552.9	90
Central India	975.5	918.8	94
Northeast India	1438.3	1386.4	96
South peninsula	716.1	717.6	100

Source: 2017 Southwest Monsoon end of Season Report, IMD

regions of the country except south peninsula was less than the respective LPAs. The realised rainfall during south west monsoon 2017 over the country as a whole and in the four broad geographical regions is given in **Table 2.3**.

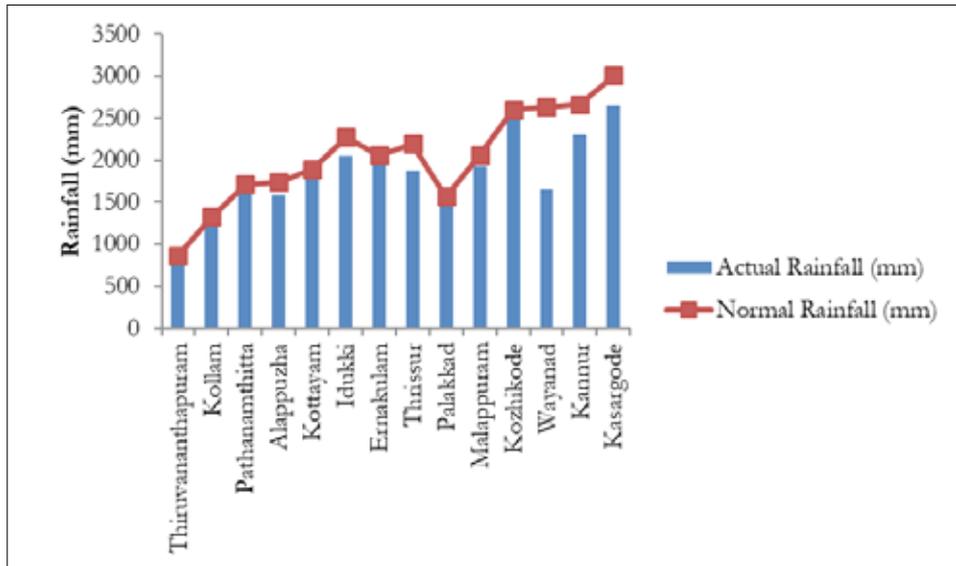
Out of the total 36 meteorological subdivisions, 25 subdivisions (constituting 65 per cent of the total area of the country) received normal seasonal rainfall, 5 subdivisions (18 per cent of the total area) received excess rainfall and 6 subdivisions (17 per cent of the total area) received deficient seasonal rainfall. Out of the 6 deficient subdivisions, 4 subdivisions were from Northwest India (West and East Uttar Pradesh, Punjab and Haryana, Chandigarh and Delhi) and 2 subdivisions were from the Central India (East Madhya Pradesh and Vidarbha) and out of the 5 excess subdivisions, 2 subdivisions were from South Peninsula (Rayalaseema and Tamil Nadu and Pondicherry) and one each from Northwest India (West Rajasthan), Central India (Saurashtra and Kutch) and Northeast India (Nagaland, Manipur, Mizoram, and Tripura (NMMT)).

The southwest monsoon reached parts of southeast Bay of Bengal, south Andaman sea and Nicobar Islands on May 14, 6 days ahead of its normal date of 20th May and set in Kerala on 30th May 2017. The south west monsoon covered the entire country by 19th July, 4 days later than its normal date of July 15.

The monsoon withdrawal was delayed and commenced from parts of northwest India on September 27 (with a delay of nearly 3 weeks). It withdrew from some more parts of northwest India on September 30. As on October 11, the monsoon has withdrawn from most parts of northwest India except east Uttar Pradesh.

The actual rainfall received in Kerala during Southwest monsoon (June 1 to September 30, 2017) was 1855.9 mm as against the normal rainfall of 2039.7 mm in 2017 showing (-)9 percent departure from normal. All the districts except Wayanad received normal rainfall during the period. The percentage departure from normal rainfall in

Figure 2.1
Southwest Monsoon Rainfall Received from June 1 to September 30, 2017



Source: Report of Indian Meteorological Department

Wayanad district was (-)37 percent (Figure 2.1).

From October 1 to November 1, the actual rainfall received in Kerala was 236.3 mm against the normal rainfall of 301.9 mm (22 per cent lower than normal). The seven districts -- Thiruvananthapuram, Kollam, Pathanamthitta, Kottayam, Ernakulam, Idukki and Kozhikode -- shows normal rainfall in this period. Other Districts received deficient rainfall. Highest percentage of departure from normal was in Palakkad District ((-)62 per cent).

Pre-monsoon Rainfall in Kerala, 2017

The pre monsoon rainfall received in the State from March 1, 2017 to May 31, 2017 was normal this year with a departure of (-)7 percent from the normal. The actual rainfall received during the period was 354.3 mm against the normal rainfall of 379.9 mm. Excess rainfall was received in the districts of Kollam and Pathanamthitta. 4 Districts (Thrissur, Malappuram, Kannur and Kasargod) received deficient rainfall and 8 districts received normal rainfall. The percentage departure from normal was highest in Kasargod District (-68 per cent). (Figure 2.2 and Appendix 2.1).

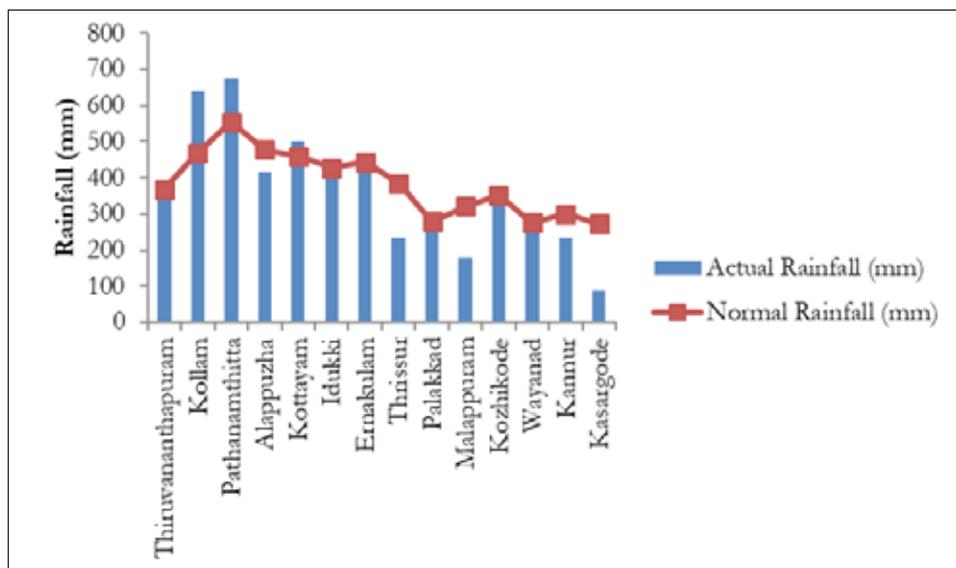
Northeast Monsoon in Kerala, 2017

The rainfall received during North East Monsoon (October 1, 2017 to December 31, 2017) was normal with a departure of (-) 8 per cent from the normal. The actual rainfall during the period was 441.8 mm against the normal rainfall of 480.7 mm. Excess rainfall was received in 3 districts viz. Thiruvananthapuram, Kollam and Pathanamthitta while 4 districts (Alappuzha, Ernakulam, Idukki and Kottayam) received normal rainfall. Other districts received deficient rainfall. The percentage departure from normal was highest in Palakkad district ((-)59 per cent).

LAND USE PATTERN IN KERALA

The total cropped area of the State has been declining consistently, from 30 lakh hectare in 2000 to 25.84 lakh hectare in 2016-17. Net sown area has recorded a slight decline of 8.64 per cent, and the area sown more than once has declined by 30.29 per cent. Current fallows have decreased 7.5 per cent whereas the

Figure 2.2
Pre Monsoon Rainfall Received from March 1 to May 31, 2017



Source: Report of Indian Meteorological Department

“fallows other than current fallows” as well as “cultivable waste land” have recorded an increase of 63.38 per cent and 71 per cent respectively. Thus the land that is available for cultivation but is not being cultivated is on the rise signaling the tendency of people to keep land fallow for various reasons.

The land utilisation statistics of Kerala show that in 2016-17, out of the 38.86 lakh hectare of geographical area, the total cropped area was 25.84 lakh hectares (66 per cent), area under forest was 28 per cent, and land put to non agriculture uses accounted for 11 per cent. Cultivable waste and fallow land constituted 3 per cent each. Year on year there has been a 2 per cent decline in the gross cropped area. This is mainly due to factors like decline in area sown more than once, diversion of economic activity from agricultural operations to non-agricultural operations due to high input prices and labour cost, shift in cropping pattern skewed towards cash crops, etc. (Appendix 2.2 and 2.3).

CROPPING PATTERN

Cropping pattern in Kerala is dominated by cash crops. It constitutes 62.46 per cent of the total

cropped area while food crops consisting of rice, tapioca and pulses constitute just 9.35 per cent. Among cash crops, coconut has the largest area under crop cover (30 per cent) followed by rubber (21.3 per cent) pepper (3.3 per cent) and coffee (3.28 per cent). Rice has the third largest area under crop cover (6.6 per cent). Year on year there has been a drastic reduction in the area of food crops, area under rice recording a heavy decline from 1.96 lakh hectare to 1.71 lakh hectare, area under pulses declining by half and that of tapioca declining by close to 1000 hectares (Appendix 2.4).

Crop-wise Analysis

Rice

Rice is the most important food crop in the State. It occupies around 6.6 per cent of the total cropped area. However, the area under it has been falling at an alarming rate ever since the 1980s from around 8 lakh hectare to 1.96 lakh hectare in 2015-16 and further to 1.71 lakh hectare in 2016-17. The production has also declined from 12.9 lakh MT in 1980s to 5.49 lakh MT in 2015-16 and 4.37 lakh MT in 2016-17. Season-wise trends also show that there has not been much of a decline in virippu,

but a drastic decline in mundakan and puncha crop (**Appendix 2.5 and 2.6**).

Inter-district analysis shows that the area under rice declined in almost all the districts except Alappuzha, Kottayam, and Pathanamthitta. Maximum decline occurred in Palakkad followed by Thrissur, Malappuram, Wayanad and Kozhikode. District-wise trends also show that among the major rice producing districts of Palakkad, Alappuzha, Thrissur and Kottayam in Alappuzha there has been an increase in production while in Kottayam there has been a marginal decline. However, in Thrissur and Palakkad there has been a drastic decline resulting in overall decline in the production of rice (**Appendix 2.7 and 2.8**).

The sharp decline in the area, production and productivity of rice was due to the severe drought experienced in the State during 2016-17. It is estimated that drought affected a total area of 50,917.62 ha of rice cultivation including crop damage in 36,927.62 ha in various districts.

In order to augment rice production during 13th Five-Year Plan, focussed interventions including Special Agricultural Zones (SAZ) for focussed project based activities, assistance for fallow land and waste land cultivation, promotion of high yielding varieties and special varieties, promotion of insitu processing and value addition including branding and marketing etc. were introduced.

Coconut

In terms of area under cultivation, coconut is the most important crop in the State with over 7.81 lakh hectare under it. It accounts for the largest share in the Gross Cropped Area followed by rubber and paddy. Kerala has the largest area under the crop in the country, but in terms of production it comes third. This indicates the low productivity of the crop in the State with just 6883 nuts per hectare. For Tamil Nadu it is 14873 nuts per hectare and for Andhra Pradesh it is 13808 nuts per hectare. Also, Kerala's share in area as well as production of coconut in the

country is declining over time. While it accounted for 69.58 per cent of the area and 69.52 per cent of the production in the country in 1960-61, the corresponding shares declined to 40.2 per cent and 42.12 per cent respectively in 2011-12. However the area and production of coconut in the State has been increasing. From 29.88 per cent of the net sown area in 1980-81 the share of coconut has increased to 41.96 per cent in 2000-01. Although it declined to 37.19 per cent in the start of the next decade, it was made good by 2011-12 to 40.24 per cent. This could be because part of the paddy fields were reclaimed and planted with coconut during the period. The production also increased concomitant to increase in the area during this period. From 3220 million nuts in 1960-61, the production increased to 5536 million nuts in 2000-01. After that the production plateaued and was more or less stagnant in the next decade. Thus the increase in output is more on account of increase in acreage as the productivity of the crop is very low in the State. In 2016-17 there was a marginal decline in the production from 5873 million nuts in 2015-16 to 5379 million nuts. Area, production and productivity of coconut in Kerala are given in **Appendix 2.9**.

The main cause for falling productivity is the prevalence of root wilt disease, poor management and existence of senile and unproductive palms. Hence massive replanting of root wilt palms by elite palms and elimination of senile palms, setting up of nurseries for production of quality seedlings and their subsequent distribution is required for increasing productivity. Restructuring of the cluster development programme is also essential for more effectiveness. The attempt made by the Department of Agriculture and Cooperation to restructure two coconut development programmes through convergence approach at the Panchayat level in 2014-15 coupled with price advantage is expected to revive coconut production in the State. The isolated attempts of production of dwarf coconut seedlings and hybrids need to be scaled up substantially with the support of Research and Development institutions. Entrepreneurial ventures for the production of value added

products like desiccated coconut, beverages, shell based products, coconut cream, neera etc has to be promoted with appropriate tie up with credit and marketing agencies. The coconut procurement system through Krishi Bhavans in association with Kerafed was introduced in 2012-13 which needs further streamlining now. The initiative taken by Government in promoting neera and value addition are expected to revive coconut economy of the State.

State Government has declared the period from 2017 Chingam 1st to 2018 Chingam 1st as Coconut Year, with a range of programmes designed to promote cultivation of the crop and its value addition. Nurseries would be set up to provide high-yielding and dwarf varieties of coconut. Special Agricultural Zones and processing units would be set up for coconut and disease control measures stepped up.

Pepper

India comes third in the production of pepper in the world after Vietnam and Indonesia. However the production of pepper in the country has been stagnant around 50000 tonnes in the last few years and hence is fast losing its status as a leading producer and exporter of pepper. Grown mostly in the slopes of Western Ghats in Kerala, Karnataka, and Tamil Nadu the cultivation base of pepper has come down drastically in the last decade hitting production and export. In 2016-17, pepper production recorded an increase to 55,500 tonnes from 48,500 tonnes a year ago. However, Kerala which accounts for 75 per cent of the total production in the country recorded a drastic decline from 42 thousand tonnes to 34 thousand tonnes in 2016-17.

With regard to prices, there has been a rally in pepper prices since 2010 but in 2015 the price registered a decline by ₹16.48 per kg compared to previous year to ₹646.79 per kg. The average prices during the first six months of 2016 suggests continuation of bullish phase in pepper prices despite bumper crop in India and in global

supplies. The price realisation during 2016 (Jan to June) was at ₹669.29 per kg compared to ₹619.76 per kg during the corresponding period of June 2015, an increase of ₹49.53 per kg.

This stagnant nature of pepper production in recent years was mainly due to low productivity and disease affected pepper gardens. In order to revive spices development in the State, the Department of Agriculture had initiated comprehensive pepper development programme in all districts of the State in 2014-15. An integrated action plan was prepared for the revival of the crop in the State, covering reorientation of planting material production, expansion of grafting wherever possible, area wide disease management, liming and nutrients management and revival of pepper samithies. The increase in production achieved could be because of this concerted effort by the GOK.

Cashew

India continued to be the largest producer of raw cashew nuts in the world. The other main producing countries are Vietnam, Brazil, Tanzania and Ivory Coast. The production of raw cashew nuts increased from 670 thousand MT in 2015-16 to 779.35 thousand MT in 2016-17. The area under cashew cultivation however recorded an increase from 1034 thousand hectares to 2034 thousand hectares in the respective years.

On the contrary in Kerala as per the statistics of Economics and Statistics Department in the last one decade, there has been a continuous and considerable decline in both area under cultivation as well as production of cashew. Its alarming to note that the production which stood at 60 thousand MT in 2004-05 declined to 33.3 thousand MT in 2013-14 and to 24.73 thousand MT in 2015-16. While area dwindled from 81 thousand hectares to 49 thousand hectares and to 43 thousand hectares during the same period. However, in 2016-17, there has been an increase in production by 3211 tonnes despite decline in area of 1430 hectares caused by an increase in productivity. Productivity of the crop which was around 900 kg per hectare

during the late eighties also dwindled to 654 kg per hectare in 2014-15. Details are given in **Appendix 2.10**.

Area and production are increasing steadily in other producing states in the country. Even though the major share of area under cashew comes from Andhra Pradesh (18.3 per cent), Maharashtra is the leading producer with 32.9 per cent share in production in 2013-14 while its share was only 10 per cent in 1990-91.

Plantation Crops

Plantation crops in general are either export oriented or import substituting and therefore assume special significance from the national point of view. It is estimated that nearly 14 lakh families are dependent on the plantation sector for livelihood. Each of the four plantation crops of South India has its distinct characteristics and economic problems. Consequent to the removal of quantitative restrictions on import, plantation crops in general are facing the threat of low quality imports.

Kerala has a substantial share in the four plantation crops of rubber, tea, coffee and cardamom. These four crops together occupy 7.04 lakh ha, accounting for 27.29 per cent of the gross cropped area in the State. Details are given in **Appendix 2.11**.

Rubber

India produced 5.62 lakh tonne of natural rubber (NR) during the year ended March 2016, lower by 0.83 lakh tonne. However, in Kerala the total production increased from 4.38 lakh MT in 2015-16 to 5.4 lakh MT in 2016-17. Details are given in **Appendix 2.12, 2.13, and 2.14**.

The price of NR reported significant gains during 2011 and thereafter the prices headed south. The latest trends in prices during January-June 2016 indicate that the price growth continued to falter. The average price realisation in RSS-4 was lower by ₹13.56 per kg while RSS 5 was lower by ₹3.58 per kg

and accordingly the average price was ₹115.82 per kg (RSS-4) and ₹112.73 per kg (RSS-5). Overall, the market trend stayed weak and subdued. Demand from the NR consuming segment remained lack lustre, weak macroeconomic cues pressured prices to south. The declining price of rubber is a cause of concern.

Coffee

Domestic coffee production for 2016-17 was estimated at 312 thousand tonnes, which represents a decrease of 36 thousand tonnes compared to previous year. Initially the Coffee Board had projected 2016-17 crop (Post Blossom estimate) at 320 thousand tonnes which was subsequently revised downwards to 312 thousand tonnes. As per the revised figure, the Arabica production was estimated at 95 thousand tonnes (30.4 per cent) and Robusta at 217 thousand tonnes (69.6 per cent). However as per FAO estimates, yield and lower productivity in India is due to limited mechanisation, pest infestation, existence of old/ senile plants and labour shortage. Thus on the productivity side much more needs to be done and towards this concerted efforts are required both at the policy and farm level. The only way to address this issue is by providing positive research and development which can directly contribute in achieving higher yield.

With regard to Kerala the production of coffee registered a slight decline from 69230 MT in 2015-16 to 63,476 MT in 2016-17. Major variety grown in Kerala is Robusta with a share of 97.1 per cent in planted area. Productivity of the crop in terms of bearing area in Kerala is 808 kg/ha which is lower than the national level of 852 kg/ha during 2011-12. Among the States, Kerala stands next to Karnataka which accounts for 70.4 per cent of total Indian coffee production.

Tea

As one of the largest tea producing countries, India accounts for 24.8 per cent of the total world

production. The domestic tea production during 2016 was higher by 58.7 mkg while South Indian production was placed at 212.9 mkg, the lowest in the decade, registering a decline for the second year in succession. This also meant that South India is not having any reprieve from the low crop trap which indeed is a matter of concern.

Kerala accounts for 5.03 per cent of the area and 6.3 per cent of the total domestic production of tea in the country. In 2016-17, tea production increased by 3607 tonnes despite area remaining the same on account of increase in productivity. The major issues plaguing the tea industry are stagnant productivity, acute labour shortage, high cost of machines, and lack of indigenous machinery (Appendix 2.15).

Cardamom

India is the second largest producer of small cardamom and plays an important role in the international trade of cardamom. The output of cardamom is dependent on prevailing climatic conditions as the cardamom plant requires intermittent spells of rains and good sunshine during the growth stage. Cardamom production in the country during 2016-17 was estimated at 19.63 thousand tonnes compared to 23.89 thousand tonnes in 2015-16, a decline of 4.26 thousand tonnes. The turn around in cardamom prices since 2006-07 continued upto 2014-15 reaching the highest level of ₹754, but thereafter the prices had fluctuated. During the current season 2016-17 (August-June), the prices had increased to ₹1105.67 per kg reporting an increase of ₹481.94 per kg. Meanwhile in Kerala, cardamom production has declined to 17147 tonnes in 2016-17 from 19500 tonnes in 2015-16.

Collective farming through Kudumbashree

Collective farming is an important area of Kudumbashree, which aims at food security both at household and community level. The major crops cultivated are paddy, vegetables, banana, pineapple and tubers. In 2016-17 area brought under

cultivation of paddy was 9,475 ha, vegetables contributed to 13,569 ha and 29,678 ha of area was covered by other crops (banana, pineapple and tubers) through 78,746 Joint Liability Groups (JLGs). Details of area covered are depicted in **Appendix 2.16**. More hand holding support including facilitation with banks and technology support are essential for improving livelihood of the women groups involved in farming.

Overview of 12th Five-Year Plan

The major thrust areas envisaged during 12th Five-Year Plan was promotion of Integrated Food crop production, revival of coconut based systems and pepper development, Agro Ecology Unit (AEU) wise technology packages, augmentation of productivity of crops, revitalisation of agricultural extension services, institutionalisation of service delivery for agriculture, strengthening of Krishi Bhavans, promotion of new technologies, strengthening organic farming, soil and plant health management, basic infrastructure for inputs and marketing and special focus to value addition.

During 12th Five-Year Plan, the area and production of vegetables increased from 40837 ha to 52830 ha and 5.51 lakh MT to 7.25 lakh MT respectively. In order to achieve the target, the activities initiated are project based vegetable cultivation in 1380 institutions, established 39 block level nurseries, developed 269 A Grade clusters and commercial cultivation through 800 clusters. The coconut development scheme was restructured and focused in continuous areas called Keragramams. Around 60 Keragramams were established for integrated management of coconut gardens covering irrigation, nurseries and value addition, production of dwarf coconut seedlings, hybridisation of newly selected dwarf coconut palms from nontraditional areas, bar-coding of palms and seednuts for identification of lineage. Decline in paddy area arrested and more land brought under sustainable paddy cultivation. 3000 ha in Kasargod was registered under organic farming. As part of strengthening agriculture extension, introduced ATMA PLUS first in the

country, established 456 farm schools, 250 Farmer Field Schools, 205 integrated farming system models, mobility support to field level officers and introduction of Toll free ATMA Call Centre for advisory services (1800-425-1661). Further 64 Agro Service Centres established for improved service delivery, issued 1.41 lakh nos of soil health cards, prepared Panchayat/Block/District level nutrient management plan, registration of 18.77 lakh farmers completed and direct benefit transfer made fully functional. A holistic Agriculture Policy was drafted after 23 years. Around 5,772 pest surveillance units, 152 plant health clinics at Panchayat level and 4 district referral clinics were established. Portable biogas plants installed in 3825 schools for conversion of organic waste into energy and enriched manure. Promotion of NEERA for boosting the economic viability of coconut sector, support to pilot project on neera and coconut sugar production by KAU, Incubation centre started at Central Tuber Crops Research Institute (CTCRI), and Ginger value addition project in collaboration with NIIST (Wayanad). The outlay earmarked during 12th Plan under State Plan was ₹3,413.91 crore and the expenditure during the period was ₹3,303.93 crore (97 per cent).

Vision of 13th Five-Year Plan

- Sustainable Agricultural development ensuring maximum productivity, profitability and ecological stability.
- Enhance area under cultivation of rice to 3 lakh ha
- Self sufficiency in vegetable production
- Doubling of farmers income by 2022
- Promotion of crop based Special Agricultural Zones (SAZ).

Key Initiatives of Annual Plan, 2017-18

The key initiatives undertaken in Annual Plan 2017-18 were the following. Integrated food crop production programme focusing on self-sufficiency in vegetable production, enhancing rice production, comprehensive fallow

land cultivation with people's participation, keragramams for integrated management of coconut gardens, promotion of organic farming and safe food production, modernisation and establishment of labs, institutional mechanism for marketing, production and distribution of quality planting materials, strengthening extension activities at AEU level, Agricultural Technology Management Agency (ATMA) plus model of extension, rejuvenation of spices economy, crop health management covering pests and disease surveillance and application of drones to assess crop health, new plant health clinics, improved service delivery by establishing 20 Agro Service Centres (ASCs) and strengthening the existing ASCs, crop insurance, revival package for pepper in Wayanad and setting up of Special Agricultural Zones (SAZ) for five crops viz. rice, vegetables, coconut, banana and flowers for convergence based result oriented scheme preparation and implementation for focused project based interventions in identified potential zones.

Crop Insurance Schemes

In Kerala large majority of agricultural producers are small farmers and agriculture is heavily dependent on the weather and the uncertainty of the weather makes agriculture a highly risk venture. Thus the uncertainty of crop yields is one of the basic risks that every farmer has to face. As crop production is affected by the vagaries of nature and damages occur due to droughts, floods, attacks of pests and diseases, crop insurance can play a vital role in sustaining farms income.

During 2016-17, the State crop insurance scheme was restructured by bringing considerable enhancement in the crop loss compensation and under the scheme 89,862 farmers were enrolled covering an area of 53,161 ha and an amount of ₹159.87 lakh disbursed towards claim amount for 2478 farmers insured under the scheme. The Restructured Weather Based Crop Insurance Scheme (RWBCIS) was notified in 12 districts except Alappuzha and Pathanamthitta covering 10 crops (paddy, banana, ginger, turmeric, pineapple,

arecanut, cardamom, pepper, nutmeg and sugarcane). Under RWBCIS, during kharif 2016 season, 31,532 farmers were insured covering an area of 21,435 ha and an amount of ₹17.19 crore was paid as claims to 21,046 farmers and during rabi season, 27,459 farmers were insured covering an area of 18,703 ha. Cool season crops of Idukki and Wayanad districts viz. cabbage, carrot, garlic, french bean and potato were notified under RWBCIS for the first time during the period. The Coconut Palm Insurance Scheme (CPIS) is being implemented in all districts and a total claim of ₹2.70 lakh was settled among 403 insured farmers covering an area of 250 ha. During 2016-17 Rabi season, the State government had notified the scheme Prime Ministers Fasal Bima Yojana (PMFBY) covering the crops such as paddy, banana, tapioca and plantain. Paddy is notified in the districts of Alappuzha, Kottayam and Pathanamthitta. Under PMFBY, 18,415 farmers were insured covering an area of 12,961 ha and an amount of ₹55 lakh paid to 341 farmers as claims.

Special Agricultural Zone

A new concept of Special Agricultural Development Zone (SAZ) was introduced during 2017-18 for convergence based result oriented scheme preparation and implementation for focused project based interventions in identified potential zones. Production, marketing, processing, value addition, Storage, irrigation etc will be covered for each zone. The facilities in each SAZ are Agro Service Centres including soil testing labs and call centre, plant health clinics, weather stations and advisories, biopharmacy including on farm production units, planting materials production units, markets, processing and value addition units, irrigation support, credit interventions if required, extension including ICT based initiatives, community Radio, farmers markets supported by LSGIs, procurement system for surplus production, promotion of farmer technology development and training to farmers on convergence mode. A separate monitoring system for projects in SAZ is also included. The SAZ suggested are:

- Rice – Kuttanad, Kole, Onattukara, Pokkali, Palakkad, Kaipad and Wayanad.
- Vegetables – Devikulam, Kanjikuzhy, Pazhayannur and Chittoor- Kollengode.
- Banana – Thrissur
- Flowers – Wayanad
- Coconut – Kozhikkode

State Horticulture Mission (SHM)

The State Horticulture Mission was formed in 2005 to implement the programme of the National Horticulture Mission, a centrally sponsored scheme, with 85 per cent central share and 15 per cent State share which was restructured as Mission for Integrated Development of Horticulture (MIDH) from 2014-15 onwards. Subsequently, GOI changed the sharing pattern of the scheme as 60:40. The main objective of the mission is a holistic development of the horticulture sector covering fruits, plantation crops, spices, flowers, aromatic and medicinal plants and mushroom. The important programmes under the mission include production and productivity improvement, post harvest management and marketing.

During 12th Five-Year Plan, a total amount of ₹190.74 crore was released to SHM including ₹145 crore from GoI and ₹45.74 crore from State share and the total expenditure incurred was ₹209.37 crore. Establishment of nurseries for production and distribution of quality seeds and planting material, establishment of new gardens, establishment of integrated pack houses, sorting and grading units, cold storage units, establishment of rural markets, strengthening of wholesale markets, market intelligence, extension quality awareness and market led extension activities for fresh and processed foods are the components implemented during the Plan period.

At present a number of agencies and private individuals are actively involved in the field and therefore an integrated approach is needed to enhance the participation of the agencies so as to achieve the desired deliverables.

Vegetable and Fruit Promotion Council, Kerala (VFPCCK)

Vegetable and Fruit Promotion Council, Kerala (VFPCCK) has been implementing various schemes in fruits and vegetable sector with the financial assistance of both State and central Governments. Formation of Self Help Groups (SHGs), awareness creation on Participatory Guarantee System (PGS), dissemination of Participatory Technology Development/capacity building programmes, production of quality seeds and planting materials, participatory credit and insurance support, group marketing and Haritha Nagari programmes for the promotion of vegetable cultivation in urban areas are the major activities. During 2016-17, the council had inducted 4465 farmers and formed 106 new SHG's for the promotion of fruits and vegetables. At present the council has a total of 1,89,902 registered farmers in 9,540 Self Help Groups. The council had initiated 4 new farmer markets and 10 collection centres during 2016-17. Now there are 278 Swasraya Karshaka Samithies and 177 collection centres under the purview of the council. During 2016-17, 1,00,213 MT of fruits and vegetables worth ₹280 crore were traded through 277 swasraya karshaka samithies. Ready to cook vegetables were made available in packets to public through cut vegetable scheme implemented in Thiruvananthapuram, Ernakulam, Calicut, Thrissur and Pathanamthitta districts. The seed processing plant at Alathur produced 17 items of vegetable seeds through registered seed growers

and 68.30 MT vegetable seeds and 6.56 lakh tissue culture banana plantlets were distributed throughout the State. An amount of ₹71.69 crore was disbursed as agriculture loan to 8919 farmers. A total of 23.92 lakh banana plants and 500 ha of vegetables were covered under crop insurance and an amount of ₹80 lakh was disbursed to farmers as claim. During 2016-17, 190 vegetable retail markets were organised all over the State during onam season to control price hike in vegetables. The farmers of the council had cultivated vegetables in 14622 ha, banana in 19964 ha and tuber crops in 2845 ha during the period. Total production during the period was 1.02 lakh MT vegetables, 1.86 lakh MT banana and 25266 MT of tubers. VFPCCK has been appointed as the regional council for Participatory Guarantee System (PGS) organic certification for fruits and vegetables in Kerala. As part of it, awareness creation of PGS to promote organic farming was undertaken and there are 213 local groups wherein 1470 farmers are cultivating 725 ha under PGS certification. Agro meteorological data have been collected from 26 Automated weather stations installed in different parts of the State with the participation of farmers. Other details of the sector are given in **Appendix 2.17, 2.18, 2.19, 2.20, 2.21 and 2.22.**

FINANCE TO AGRICULTURE

Credit is one of the important supply side factors which contributes to agriculture production. An effective credit delivery system is imperative for providing timely and adequate credit to the agriculture sector. Commercial banks, Regional Rural Banks (RRBs) and Co-operatives are the

major financial institutions functioning in the area of finance. At the national level, during 2016-17, banks had disbursed ₹959,826 crore (provisional as on February 28, 2017) to the agriculture sector (including agriculture and allied, agri-infrastructure and ancillary activities), against a target of ₹900,000

crore, out of which commercial banks, RRBs and cooperative banks disbursed (provisional) ₹733,201 crore (76.3 per cent), ₹103,974 crore (10.8 per cent) and ₹122,651 crore (12.77 per cent) respectively. In 2015-16, the disbursement was 8.7 lakh crore. There has been an impressive growth in agricultural credit flow from ₹2.54 lakh crore to ₹9.60 lakh crore (provisional as on February 28, 2017) during the last ten-year period from 2007-08 to 2016-17. However, the share of term loan in the total agricultural credit disbursed declined steadily from 30.2 per cent in 2008-09 to 22.1 per cent in 2012-13, followed by a reverse trend, with the share of term loan touching 35.1 per cent in 2016-17.

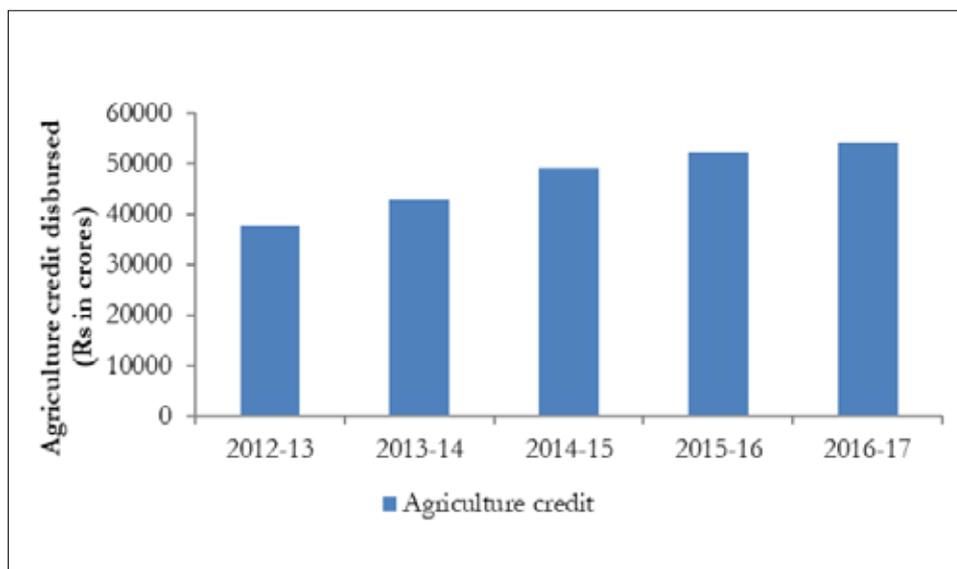
In Kerala too, agriculture advances has increased significantly in the last ten year period. The figures for the 12th Five-Year Plan period indicate that from ₹37,710 crore in 2012-13 it has increased to ₹54,270 crore in March 2017 showing a 43.9 per cent increase (Figure 2.3). As of now, it constitutes 5.64 per cent of the total agriculture advances in the country. Out of this, ₹33,802 crore (62.2 per cent) was disbursed by commercial banks, ₹8,515 crore (15.6 per cent) by RRB and ₹11,953 crore (22.2 per cent) by co-operative banks. Thus commercial banks continue to play a predominant

role in the advance of credit in agriculture and allied activities

Investment Credit

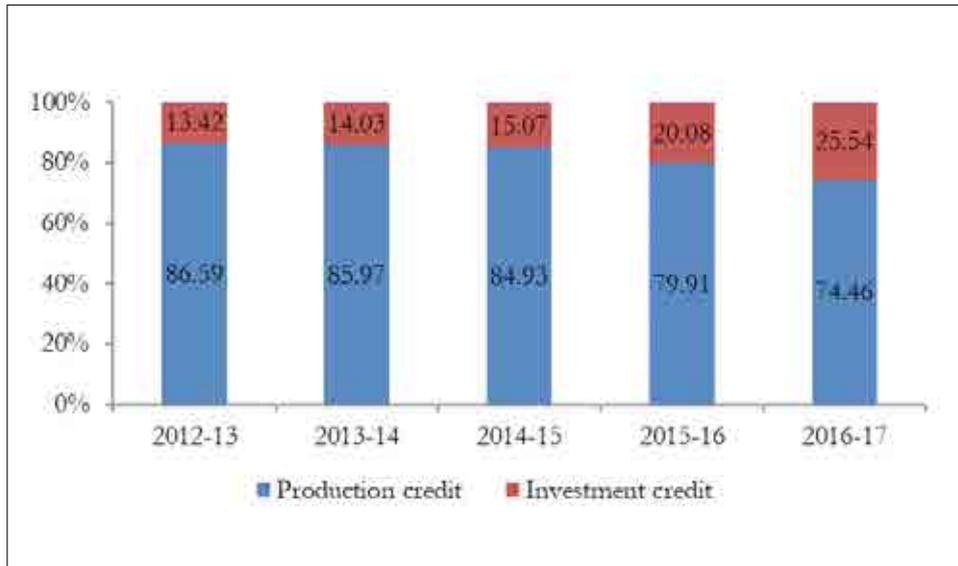
As regards the breakup of total agriculture credit to production and investment credit, it can be seen that the share of investment credit has increased to 25.54 per cent of the total credit from 13.4 per cent in the beginning of the 12th Plan period (Figure 2.4 and Appendix 2.23). This is definitely a positive development given the fact that share of investment credit had been consistently declining over the years from 22 per cent in 2008-09 to 11 per cent in 2011-12. However, the skewed ratio in favour of short term crop loan or production credit has resulted in low investment in capital/productivity enhancing assets. Hence, a segmentation approach could be adopted in credit delivery whereby the segment-/sector-specific credit requirements are assessed and differential rates of interest are enabled through subvention (keeping in view the net income per unit from a particular segment/sector/activity), to support activities that are critical but not picking up (*State focus Paper, NABARD-2017-18*).

Figure 2.3
Agriculture Advances in Kerala



Source: SLBC

Figure 2.4
Share of Production and Investment Credit in Total Agriculture Credit in Kerala



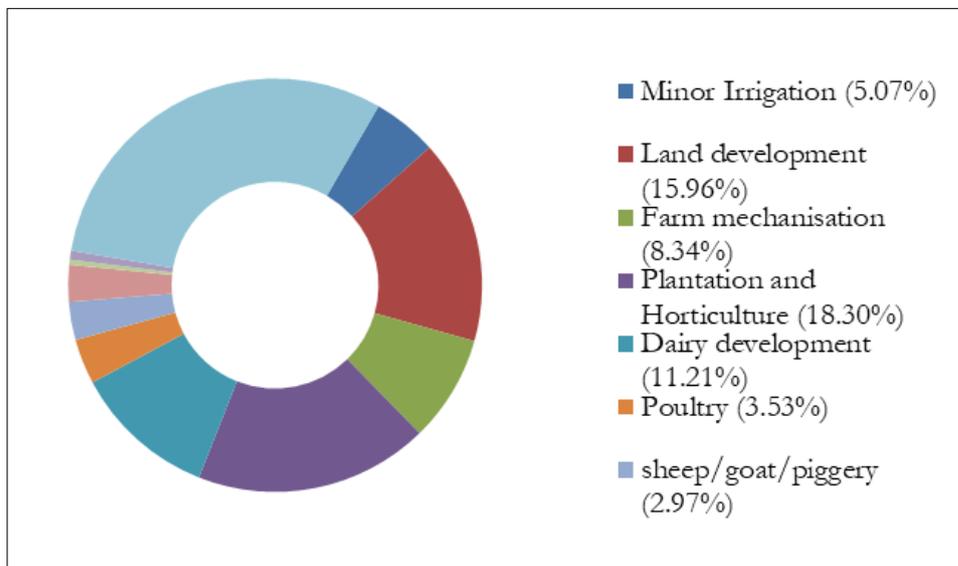
Source: SLBC

Analysis of the flow of investment credit to various subsectors revealed that in 2015-16, largest allocation was for plantation- horticulture (18.3 per cent) and land development (15.96 per cent). Farm mechanisation and dairy development accounted for 8.34 per cent and 11.21 per cent respectively. Productive sectors like fisheries, poultry, sheep

goat and piggery accounted for less than 5 per cent (**Figure 2.5** and **Appendices 2.24** and **2.25**).

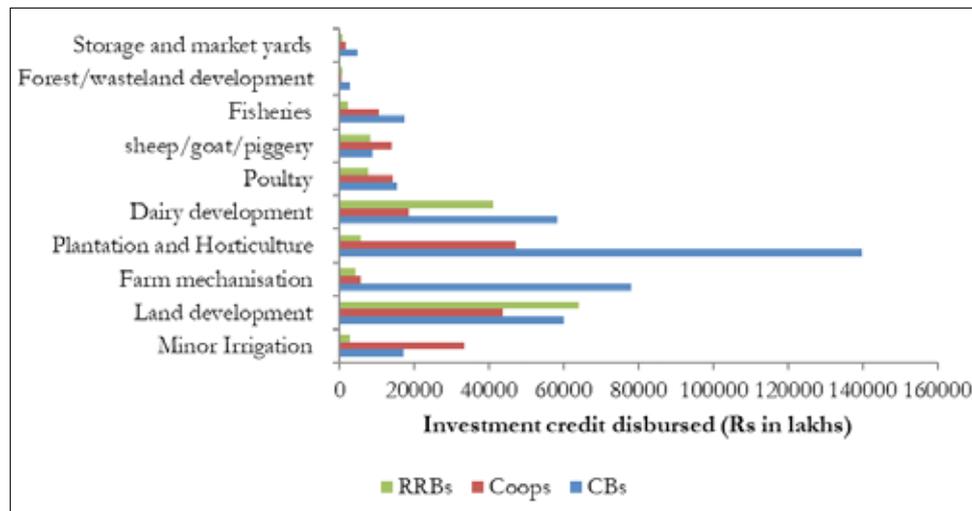
Agency wise flow of investment credit showed that commercial banks have disbursed the largest amount of credit (63 per cent) followed by co-operatives (22 per cent) and the rest by RRB.

Figure 2.5
Sub Sector-wise Ground Level Investment Credit Disbursed (2015-16)



Source: State Focus Paper 2017-18, NABARD

Figure 2.6
Agency-wise, Sub Sector-wise Flow of Investment Credit



Source: State Focus Paper 2017-18, NABARD

However, if we examine the area wise disbursement it can be seen that commercial banks have mainly focused on sectors like plantation and horticulture, farm mechanisation, land development and dairy development (**Figure 2.6**). Co-operatives on the other hand have focused on minor irrigation apart from plantations as well as land development while RRBs have given primary emphasis to land development and dairy development. Thus it can be inferred that the productive sectors like fisheries, sheep/goat/piggery and poultry development have been largely neglected from the point of view of investment credit.

Long Term Rural Credit Fund (LTRCF)

As the share of long term investment credit in agriculture is declining over the years, hampering the asset creation in agriculture activities and having an adverse effect on productivity in agriculture, Government of India has set up a “Long Term Rural Credit Fund” with NABARD for providing long term refinance support for investment credit in agriculture activities exclusively for cooperative banks and RRBs at a concessional rate of interest. All State Cooperative Banks, SCARDBs and RRBs

which are eligible to avail refinance facilities from NABARD, subject to their satisfying the eligibility criteria, are eligible for LTRCF. Automatic refinance facility will be extended without any upper ceiling of refinance quantum, bank loan or total financial outlay for all projects under agriculture sector. 2015-16, Kerala had disbursed an amount of ₹750.00 crore to KSCARDB, ₹181.00 crore to KSCB and ₹38.00 crore to Kerala Gramin Bank under LTRCF.

Kissan Credit Card

Kissan Credit Card is an effective credit delivery tool for providing hassle-free timely and adequate credit. As per the reports available with SLBC, 518802 Kisan Credit Cards with an amount of ₹17826.27 crore have been issued during the 2015-16 in the State. As per the revised guidelines for KCC, the KCC should be a smart card cum debit card which could be used in the ATMs/hand held swipe machines etc. RuPay has come out with its RuPay KCC offering which leverages the benefits of both KCC and RuPay. Unlike normal KCC which serves only as an identity card and facilitates recording of transactions on an ongoing basis, RuPay KCC is actually a smart card that can be used

at the nearest ATM/PoS for withdrawing cash. It removes the necessity of going to PACS or a bank branch to operate the account. At present issuance of RuPay KCC is on a pilot stage in Kerala.

Farmer Indebtedness in Kerala

The above analysis was about the disbursement of agriculture credit in the State. It is also important to know the composition of the loans from the point of view of a farmer or what is the level of farmer indebtedness in the State. The Situation Assessment Survey of Agriculture Households of the NSSO provides detailed estimates of the composition of outstanding loans in agriculture as well as the level of indebtedness in the country (Table 2.4). A perusal shows that, in Kerala, the total farm loans amount to ₹38,821 crore out of which ₹34,835 crore (89.7 per cent) is owed to formal institutions and a very a small percentage is sourced from informal ones. Also small and medium farmers account for a major share of the total formal loans. This is a pointer to the level of financial inclusion in the State, small and marginal farmers are not falling prey to the exorbitant rates charged by informal sources and moneylenders. This is in stark contrast to the overall picture of the country where as much as 85 per cent of the loans of small and medium farmers were sourced from informal sources.

Assistance from NABARD

NABARD, Kerala disbursed financial assistance of ₹5820 crore in the State during the year 2015-16. Of the above, ₹5,090 crore was disbursed as refinance to banks, ₹600 crore to State Government under Rural Infrastructure Development Fund (RIDF), ₹115 crore as direct assistance to cooperative

banks and ₹15 crore as grant assistance from dedicated funds to various agencies for various developmental and promotional activities. Out of the ₹5,090 crore disbursed as refinance, ₹2,390 crore was for long term investment credit and ₹2,700 crore was towards short term assistance to banks. The refinance for long term agriculture investment of cooperative banks was resumed in the current year after a gap of 10 years. Under RIDF, new projects worth ₹710 crore was sanctioned to State Government during the year.

RIDF

NABARD, since inception, has prioritised its strategies for facilitating credit flow to rural infrastructure sector to fulfill its mission of rural prosperity through credit and related services. From the year 1995 onwards, NABARD is funding rural infrastructure projects through its flagship programme of Rural Infrastructure Development Fund (RIDF) and as on date projects worth ₹2.602 lakh crore have been assisted throughout the country. In Kerala State projects with a total financial outlay of ₹9,789 crore involving RIDF loan of ₹8,172 crore have been assisted. In Kerala during the XXII tranche an amount of ₹673.99 crore was sanctioned and ₹134.80 crore was disbursed. The tranche wise sanction and disbursement under RIDF are shown in Appendices 2.26, 2.27 and 2.28.

Co-operation

Co-operatives in Kerala play a pivotal role especially in the rural area of the State owing to its huge network and unparalleled reach. They account for an estimated 21 per cent of the State's total agricultural credit, have significant reserves,

Table 2.4
Estimated Outstanding Loans by Land Holding Size and
Source of Loans for 2016-17, ₹ in crore

	Small and Medium Farmers			Large Farmer			Grand Total		
	Formal	Informal	Total	Formal	Informal	Total	Formal	Informal	Total
Kerala	34429	3993	38361	407	53	461	34835	3986	38821
India	93253	208771	102024	31515	10645	42160	324768	219417	544185

Source: Economic survey 2016-17, GOI (Estimated from unit-level data on Situation Assessment Survey of Agriculture Households 2012-13)

and often hand out money to fuel regional development. At a time when the country calls for inclusive growth as a key factor in removing socio-economic disparities, the cooperatives are the best organisation to achieve this objective as they are deeply rooted in the psyche of the people, are participatory by nature, and promote equity

At present there are 15,428 co-operative societies functioning under the Registrar of Co-operative Societies out of which 11,966 are working satisfactorily. Out of these majority are credit co-operatives (4,048) and consumer co-operatives (4,665) and 1,160 are women co-operatives. In addition, there are marketing, health and SC/ST co-operatives nearly half of which are either dormant or in loss. Details of the various types of co-operative societies are given in **Appendices 2.29** and **2.30**.

Credit Co-operatives

The credit co-operative societies are most vibrant and viable in the State. The co-operative credit structure in the State comprises short term credit and long term credit. The Short Term Agricultural Credit Structures mainly comprises the Kerala State Co-operative Bank (KSCB) at the apex level, 14 District Co-operative Bank (DCB) at the district level 1,647 Primary Agricultural Co-operative Societies (PACS) at the bottom level. These co-operatives are basically self-governing institutions with total accountability to the borrower members and in whose management they have a voice. In addition to the three-tier co-operative banking, there are well developed network of urban co-operative banks in the State.

In the long-term credit, Kerala State Co-operative Agriculture and Rural Development Bank (KSCARDB) is at the top and 78 Primary Co-operative Agricultural Rural Development Banks (PCARDB) at the bottom level. KSCARDB is playing an important role in promoting capital formation in agriculture and rural sectors in the State through its long term investment loans. The survival of KSCARDB and affiliated Primary

Co-operative ARDBs in the long run depends on their ability to raise funds at reasonable cost that permits financing of farmers and other rural sections at affordable interest rates and to offer a complete range of credit and financial services to them.

The efficiency of the co-operative credit movement rests with the primary agriculture credit societies functioning at the grass root levels. There are 1,647 societies functioning in the State with a membership of 2.35 crore. However, during the period under review, the share capital of the societies has increased from ₹1,497.06 crore to ₹1,802.81 crore. The deposits during the year have increased from ₹80,190.41 crore to ₹83,157.38 crore while the loans issued has declined from ₹76,007.84 crore to ₹75,350.90 crore. Out of the total loans issued, the share of agriculture loans comes to around 10 percentage of the total loans issued. Also, one important development is the decrease in the medium term and long term loan for agriculture that will adversely affect capital formation. Selected indicators and credit operations of PACS are given in **Appendices 2.31, 2.32** and **2.33**. During 2016-17, an amount of ₹34.25 lakh had been sanctioned to 35 PACS as share capital assistance.

Consumer Co-operatives

The overall aim of the consumer co-operative is to supply essential commodities at economic prices. These societies act as principal agents in the public distribution system by providing essential and consumer articles to the general public at a reasonable rate, than the rate prevailing in the open market. The organisational set up under the consumer co-operative segment consists of the Kerala State Cooperative Consumer Federation (apex) at the State level with 14 District Wholesale Stores and 643 Primary consumer stores at lower levels. The Kerala State Cooperative Consumer Federation (apex) makes bulk procurements and supplies these to District Wholesale stores, Department stores named Triveni and primary stores. The District whole sale stores and primary

stores in turn cater to the needs of the consumer through their own outlets, super markets, and departmental stores.

Triveni super markets is one important segment under consumer co-operatives intending to save the public from the exploitation of middlemen by dealing with wholesale of food and grocery, cosmetics, household and electrical, textiles etc. There are 204 Triveni Super markets in addition to mobile Triveni units and floating triveni super stores for supplying essential items to the public. The Neethi Scheme started as per directions of Government of Kerala in 1998 is being successfully implemented through 1,000 odd selected Primary Agricultural credit societies in all the districts of Kerala for the distribution of consumer goods at the lowest prices, especially in rural areas., Neethi medical stores were started for –providing medicines at subsidised rates. Consumerfed procures and distributes medicines at whole sale rates as per the requirement of the Neethi medical stores. At present there are 96 Neethi Medical Stores directly run by Federation in addition to the 600 odd stores run primary co-operative societies. Nanma stores was started to distribute 10 items of essential commodities at subsidised rates through network of 2180 retail outlets mainly aiming at the extremely poor and downtrodden in the society. Currently there are 751 Nanma stores run by the Consumer fed itself. 1,311 of them are run by selected co-operative societies and 869 by the Triveni wing of federation. Here the items are sold at less than 20 per cent of market rates. Another major project started is to open directly run Nanma stores in Panchayath and Municipal Wards having no Nanma stores run by primary societies at present.

Deposit Mobilisation Campaign by Co-operative Societies

Deposit Mobilisation campaigns by co-operative credit institutions continued during the year under report. During the period under review, the co-operatives could mobilise ₹6,386.18 crore as against the ₹7,311 crore in 2015-16. Year wise target and achievement is given in **Appendix 2.34**.

Achievements of the Sector in 2016-17

- Computerisation and modernisation of 26 PACS with the assistance of ₹39.61 lakh
- Rehabilitation of 19 weak but potentially viable co-operatives
- Share capital base of Thiruvananthapuram District Co-operative Bank, Pathanamthitta District Co-operative Bank, Palakkad District Co-operative Bank and Kasargod District Co-operative Bank were strengthened for increasing the CRAR position by providing total ₹1,100 lakh.
- Revitalised 112 weak Vanitha Co-operative Societies by providing assistance of ₹549.131 lakh.
- The working of 312 consumer co-operative societies and Neethi stores were strengthened to supply essential food items at very subsidised rates for the extremely poor and downtrodden to shield them from soaring price level by providing assistance of ₹200.90 lakh.
- 39 SC/ST co-operative societies undertaken various projects for supporting the income and livelihood of the families through special revival schemes, 2 SC/ST societies started institutes to impart training for SC/ST youths to various courses approved by KGTE/other Government agencies, 32 SC/ST societies undertaken building construction by availing building grant, 4 SC/ST Societies undertaken big project under special scheme, 133 SC/ST societies were supported with managerial subsidy, 42 SC/ST society with share capital assistance, 67 SC/ST societies were assisted with working capital grant.

Formation of Kerala Bank

Government of Kerala has initiated the steps for forming the Kerala Bank by amalgamating the 14 District Co-operative Banks with branches across the State as well as the State Co-operative Bank into a single entity. With a large deposit base as well

as holding a considerable share in the total banking transactions in Kerala, it is poised to become the second biggest bank- second to the State Bank Group. The cooperative sector was already wielding a considerable share of the banking business in the State and it could further grow, diversify, and fill the vacuum left by the State Bank of Travancore following its merger with the State Bank of India. The Kerala Bank and the PACS would function in a complementary manner. The PACS would continue their current banking operations and the Kerala Bank would focus on value-added services and specialised banking products.

Support by National Cooperative Development Corporation

National Co-operative Development Corporation or NCDC is a statutory organisation established by the Government of India under an Act of Parliament, charged with the function of planning and promoting programmes for the production, processing, marketing, storage, export and imports of agricultural produce and notified commodities and for distribution of agricultural production requisites through co-operatives. National Co-operative Development Corporation has emerged as a developmental and promotional financing institution for the co-operative sector in the country. NCDC (National Cooperative Development Corporation) has disbursed a

cumulative financial assistance of ₹6736 crore for various cooperative development projects as on March 31, 2017, of which ₹1,610.84 crore is through State Government and ₹5,125.3 crore is via direct funding. Also, out of the ₹6,736.14 crore, ₹1,506.49 crore comes under long term loan and only ₹56.65 crore come under subsidy, ₹5,173 crore comes under working capital. Types of NCDC Assistance are shown in **Appendix 2.35**.

In 2016-17, Kerala stood 6th in all India standing for disbursement of NCDC's financial assistance to States. Sanctions and release of NCDC funds to the State of Kerala for 2016-17 was ₹603.73 crore and ₹462.79 crore respectively which comes to the tune of 2.39 per cent of the total sanctions and 2.91 per cent of the total releases made by the NCDC country wide. Cumulatively 108 cooperatives in Kerala were benefitted by NCDC funding through State Govt/Direct funding scheme during 2016-17 either through sanctions/disbursement of funds. Almost all sectors of Agriculture and allied activities including short term agriculture credit, marketing of agriculture produce, distribution of fertilizers and inputs, consumer cooperatives, Processing activities, storage/godowns, infrastructure creation, service sector, industrial cooperatives, Labour cooperatives and weaker section programme like fisheries, SC/ST etc. were covered by NCDC finance in the State during 2016-17. Details of NCDC assistance are given in **Appendices 2.35, 2.36 and 2.37**.

FOOD SECURITY

Food security as defined by the UN's Committee on World Food Security, is said to exist when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. The four pillars of food security are availability, access,

utilisation and stability. The nutritional dimension is integral to the concept of food security. In order to achieve the concept of 'zero hunger' the UNO declared its aim to end hunger, achieve food security and improved nutrition and promote sustainable agriculture as a Sustainable Development Goal. In line with the UNO declaration, the Government

of Kerala has announced a scheme for a hunger free State.

The number of undernourished people in the world has increased to an estimated 815 million in 2016, according to a report published jointly by the Food and Agriculture Organisation (FAO) of the United Nations. Out of this 520 million live in Asian countries. The incidence of poverty in India is estimated at 264.9 million in 2011-12. Further, the calorie and protein intake of a large number of people in India, especially in rural areas, is far below the normal level. As per the State of Food Insecurity in the World 2015 (FAO), India has the second highest number of undernourished people at 194.6 million which is around 15.2 percent of the world's total undernourished population. In order to reduce the incidence of poverty and to attain food security, Government of India enacted the National Food Security Act 2013 to ensure the subsidised availability of food grain to approximately two thirds of India's 1.2 billion people.

Kerala is a State with a deficit in food production. Of the total requirements of food grain, only

15 per cent is being produced in the State. In case of vegetables, the State heavily relies on its neighbouring States. There is a strong correlation between stability in agricultural production and food security. Therefore, along with the provision of food subsidies, stability in agricultural production and strengthening of supply chain management needs to be addressed in order to ensure food security. Although Kerala is a highly progressive State in terms of education, healthcare facilities and awareness among beneficiaries, nutritional security of the most vulnerable is extremely critical to fulfil the vision of a hunger-free Kerala. The various schemes run by the State towards poverty alleviation along with the central government schemes such as Public Distribution System, Integrated Child Development Schemes and Mid Day Meal which approach food security through a life cycle approach, need further strengthening, integration, modernisation and monitoring. One of the main objectives of the 13th Five Year Plan is to make Kerala a hunger-free State by supplying meals at nominal prices to the needy (**Box 2.1**). The activities of Haritha Keralam, one of the four pillars of the Navakerala mission are directly linked with food security.

Box 2.1 **Hunger Free Kerala**

The 17 Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development were adopted by world leaders in September 2015. The SDG focuses on ensuring food and nutrition security through five well defined targets to be achieved by 2030 - ending hunger and ensuring access for all, safe, nutritious and sufficient food all year round; end all forms of malnutrition; double agricultural productivity and incomes of small-scale farm producers; ensuring sustainable food production systems; and maintaining the genetic diversity of seeds, cultivated plants and farmed and domesticated animals.

The Zero Hunger Framework through its 2030 agenda aims to end hunger and malnutrition in all forms and in all parts of the country by 2030. Kerala has initiated measures to end hunger in all its form in the State by 2030.

The Government has started a scheme to provide one free meal a day for the needy. In 2017-18, the scheme has been proposed to be implemented in two selected districts as a pilot project with the help of Kudumbasree units and other voluntary organizations/non-government organizations, who have prior field experience. In line with the State Government policy, several Local Self Government units have directly initiated the scheme to cater the needy.

National Food Security Act, 2013

The National Food Security Act, 2013 (also Right to Food Act) is an Act passed by the Parliament of India which aims to provide subsidised food grain to approximately two thirds of India's 1.2 billion people. Up to 75 per cent of the rural population and 50 per cent of the urban population will be covered under TPDS, with an uniform entitlement of 5 kg per person per month. However, since Antyodaya Anna Yojana (AAY) households constitute the poorest of the poor, and are presently entitled to 35 kg per household per month, entitlement of existing AAY households will be protected at 35 kg per household per month. Since National Food

Security Act (NFSA) started in Kerala with effect from November 2016, the present government has been provided an allocation of ₹117 crore in the Annual Plan 2017-18 to implement various components under NFSA. Supply Chain Management and installation of e-POS machines will be completed by December 2017.

The positive attempts made by the State government to implement PDS in an inclusive manner are to be greatly appreciated. If NFSA is implemented as visualised in the State, the opportunity cost of running the PDS would be very high. Cost-effective interventions exist that can help the State meet that challenge. Reducing

Box 2.2

National Food Security Act – Kerala Scenario

The National Food Security Act, 2013 is an Act of the Parliament of India which aims to provide subsidised food grains to approximately two thirds of India's 1.2 billion people. It was signed into law on 12 September 2013, retroactive to 5 July 2013. Government of Kerala started NFSA implementation in the State with effect from November 1, 2016. Under the NFSA, End to End computerization of the entire chain of the Public Distribution System has been planned with the objectives of reducing leakages, improving targeting and reducing the economic cost of distribution. It also involves introduction of electronic point of sale (e-pos) at the ARD, supply chain management from the FCI to the ARD level, biometric authentication for retail and wholesale transactions, providing decision support systems in a GIS based graphic interface to ensure an effective, responsive, transparent, efficient and corruption free PDS. The department in collaboration with NIC and other partners plan to complete the implementation of End to End computerization of PDS components in 2017-2018. Supplyco has been entrusted with the implementation of the door step delivery of rationed articles under PDS in Kerala.

Keeping in line with the NFSA, the Government of Kerala took measures to identify eligible households. In Kerala, the process of renewal of existing ration cards coincided with the statutory provisions of the NFSA. As mandated in the NFSA, "priority" and "non-priority" ration cards will replace the BPL and APL cards respectively. The NFSA has fixed a ceiling cap on the rural and urban population to be included in the priority list as 75 per cent and 50 per cent respectively. However, based on this, if Kerala had initiated taluk-wise ranking, a lot of eligible poor households would have been denied subsidised ration and other benefits. State wise ranking of the beneficiaries was conducted. This was initiated by the new Government in Kerala and hence there was a delay in the ration card renewal process. Full fledged NFSA operations including installation of E-PoS machines in ARDs, fitting of GIS in the vehicles transporting food grains etc. are expected to be in full swing from January 2018 onwards.

Source: Civil Supplies Department

post-harvest loss of food, reducing leakage of food with the help of an efficient PDS system and so on are the cost-effective interventions.

Distribution of Ration Cards

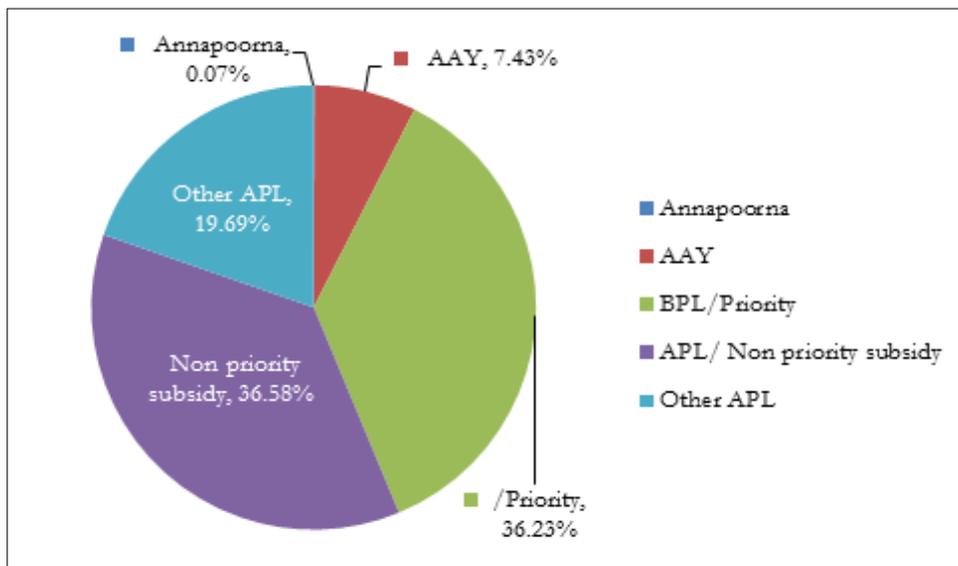
In pursuance of the Essential Commodities Act 1955 enacted by Government of India, the Public Distribution System(PDS)was started in the State on 1st July 1965. In a State with a high deficit in the production of food grain, PDS has great relevance and importance. The timely lifting of commodities allocated from the Central pool and ensuring the effective distribution of the same through 14,335 ration shops is a major responsibility of the PDS. Kerala made pioneering achievements in the implementation of a Universal Rationing System.

The number of ration cardholders in the State decreased from 83.14 lakh in 2015-16 to 80.24 lakh in 2016-17. Out of the 80.24 lakh ration cards, 35.08 lakh cards come under NFSA and 45.16 lakh comes under non-NFSA. The NFSA section includes 5.96 lakh AAY cards, 5726 Annapoorna card holders and 29.07 lakh priority cards. The non-NFSA section includes 29.35 lakh non

priority subsidy group and 15.80 lakh non priority group. The entire PDS has undergone a major transformation consequent to the implementation of NFSA 2013. In Kerala four types ration cards with different colour codes for households came into existence. The yellow colour code represents the AAY card, the Priority card comes in pink colour, the non-priority subsidy card is blue in colour and the white colour cards are the non-priority ones (**Figure 2.7**). In addition to this, there are 6044 ration permits for institutions. The permits were issued to institutions/organisations which work in the area of humanitarian aid and charity. They get food grain at subsidised rates.

The Government of Kerala published a draft priority list of 1.54 crore members from 35.03 lakh households in the State, who will be covered under NFSA subsidies. From the remaining 1.87 crore members in the State, covering 45.16 lakh households, 1.21 crore members from 29.35 lakh households come under non priority- subsidies (State Subsidy). Details of the number of card holders and quantity of food grain available to each category are given in **Table 2.5** and category wise card holders and subsidy amount spent by

Figure 2.7
Category-wise Card Holders in Kerala as on March 31, 2017, in per cent



Source: Civil Supplies Department

Table 2.5
Category-wise Distribution Details of Food Grains under NFSA

Sl. No.	Category	No. of Ration Cards	Rice	Wheat	Fortified Atta
1	AAY	595,800	28 Kg/Month (free of Cost)	7 Kg Month (free of cost)	
2	Priority	2,906,709	4 Kg/Member/ Month (free of cost)	1 Kg/Member/ Month (free of cost)	
3	Non Priority (Subsidy)	2,935,436	2 Kg/Member/ Month (@ ₹2.00/Kg)		1 Kg/Month (@ ₹15.00/Kg)
4	Non Priority (Non Subsidy)	1,580,085	₹8.90/Kg as per the availability of Stock	₹6.70/Kg as per the availability of Stock	2 Kg/Month (@ ₹15.00/Kg)
5	Annapoorna	5,726	10 Kg/month(@ free of cost)		

Source: Civil Supplies Department 2017

Government of Kerala for distribution of food grain during 2016-17 is given in **Appendix 2.38**.

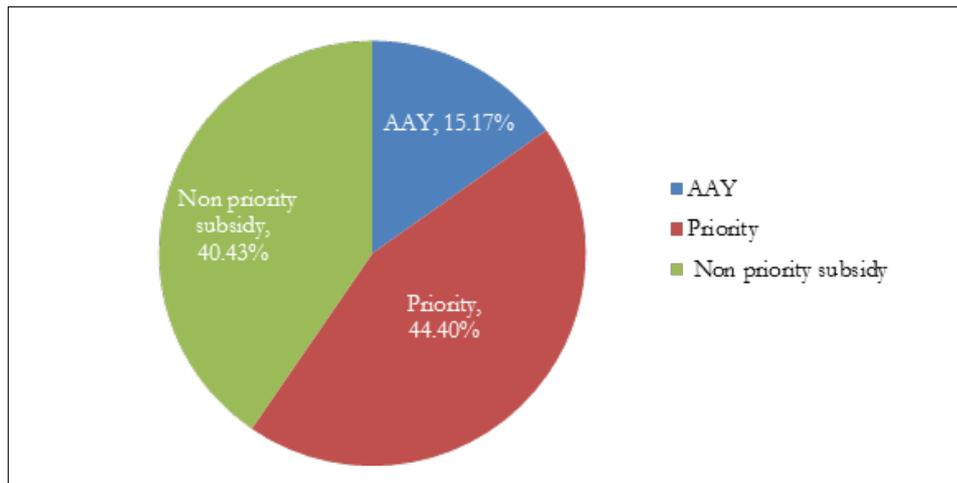
Subsidy by Government of Kerala for Various Card holders

In 2016-17, out of a total subsidy of ₹48,163.87 lakh spent for various categories of card holders, ₹7,305.21 lakh was spent for AAY

card holders, (15.17 per cent), ₹21,384.76 lakh for priority card holders (44.40 per cent) and ₹19,472.72 lakh (40.43 per cent) for non priority subsidy cardholders (**Figure 2.8** and **Appendix 2.38**).

During 2016-17 rice allotment to APL cardholders was 4.05 lakh MT and BPL card holders 4.29 lakh MT. In 2017-18, upto August 31, 2017, 2.14 lakh tonnes of rice and 0.53 lakh tonnes of wheat was

Figure 2.8
Subsidy Spent for Various Category of Card Holders in Kerala as on March 31, 2017



Source: Civil Supplies Department

distributed to AAY and ANP. At the same time, 1.37 lakh tonnes of rice and 0.12 lakh tonnes of wheat was distributed to the non-NFSA group. Details of the distribution of commodities through the PDS are given in Appendix 2.39. District wise details of distribution of food grain under AAY & ANP schemes (as on August 31, 2017) are given in **Appendix 2.40**.

Anthyodaya Anna Yojana (AAY) and Anna Poorna Scheme (ANP)

Under this scheme 35 kg of rice per month are provided to the poorest of the poor families under NFSA and this has been implemented in the State since 25-12-2001. There are 5.96 lakh Anthyodaya Anna Yojana (AAY) card holders in 2016-17 as compared to 5.82 lakh in 2015-16. In 2016-17, the allotment of rice under AAY was 230,022 MT. Government of India supplies food grain under AAY to the State @ ₹3/kg and the State Government in turn provides it to the beneficiaries free of cost (**Appendix 2.38**).

The Anna Poorna scheme provides 10 Kg of rice per month free of cost to destitute people aged 65 years and above who are not in receipt of any of the pensions from the government. The targeted number of beneficiaries approved by the Government of India is 44,980. But the number of beneficiaries identified in the State is decreasing periodically, this figure was 23,322 in 2015-16 and as on March 31, 2017, it is 5,726. Details of distribution of food grain under AAY and ANP schemes are given in **Appendix 2.41** and **2.42**.

Central Allotment of Sugar and Kerosene

The Government of India had dispensed with the scheme of issue of sugar through PDS w.e.f March 1, 2017. During Onam, 1 Kg sugar per card was given to all card holders @ 22/Kg in 2017-18 by State Government. As on August 31, 2017, 2718.78 MT of sugar has been distributed. In 2016-17, 123,632.16 MT of sugar was

distributed against 53,664 MT in 2015-16. There was an increase in distribution by 130.38 percent in 2016-17. Allotment of kerosene to Kerala decreased by 26.04 percent in 2016-17. The allotment was 84,628.45 KL in 2016-17 as against 114,422 KL in 2015-16. Up to August 31, 2017, 22,571.81 KL Kerosene has been distributed in the State. Details of Central allotment are given in **Appendix 2.43**.

District-wise Distribution of Food Grain

During 2016-17, the offtake of NFSA rice was highest in Malappuram district with 12 per cent followed by Thrissur district with 11.3 per cent of the total of 438,279.3 MT. Whereas in the case of NFSA wheat, Thrissur had the higher offtake of 11.3 per cent followed by Malappuram with 10.9 per cent. The least share of NFSA rice and wheat was for Wayanad district with 2 per cent each. In the case of non-NFSA rice, Thiruvananthapuram district had the higher offtake of 13.29 per cent followed by Malappuram with 12 per cent. In the case of non-NFSA wheat, Thiruvananthapuram has the highest offtake of 11.65 per cent followed by Ernakulam with 11.60 per cent. The least share of non-NFSA rice was to Pathanamthitta (2.06 per cent) and least share of wheat was to Wayanad (2.24 per cent). **Appendix 2.39** and **Appendix 2.40**.

Kerala State Civil Supplies Corporation (Supplyco)

Kerala has one of the best Public Distribution System (PDS) networks in India. The Kerala State Civil Supplies Corporation forms the second line of the PDS and is instrumental in stabilising the prices of essential commodities in the State. It was set up in 1974 to provide food security to the State. Kerala, being a consumer oriented State, the control of undue rises in prices is not possible without a powerful public distribution system that intervenes in the open market effectively throughout the year. The system ensures the distribution of essential items through fair price

shops and Supplyco outlets to every person in the State. Supplyco (Kerala State Civil Supplies Corporation) is mandated to control the prices of 13 essential commodities by distributing it at subsidised prices through its 1,406 stores spread across the State.

Supplyco has its headquarters in Kochi and operates through 5 regional offices, 56 depots and 1100 plus retail outlets. Details of outlets opened are given in **Appendix 2.44**. Its remit includes retailing of Fast Moving Consumer Goods (FMCG) at lower prices, conducting special fairs in order to check undue rises in prices during festival seasons, retailing of medicines through State-run medical stores, procurement of paddy, processing and distribution of wheat and its products, acting as a dealer of petroleum products like kerosene, petrol, diesel and LPG and also acting as a nodal agency in implementing the programmes of the Government of India in the State such as starting of Micro Biology Lab and Food Processing Units. In 2016-17, 8 Maveli stores, 10 super markets, 1 Peoples Bazaar and four medical stores were opened by the Civil Supplies Corporation (**Appendix 2.44**). The sales turnover of the corporation increased from ₹2,223 crore in 2010-11 to ₹3,857 cores in 2015-16. As on April 1, 2017, the number of FCI sub depots was 21; number of whole sale shops was 140 and the number of retail shops was 11,572.

Legal Metrology

The role of the Legal Metrology Department is increasing day by day. The major function of the Legal Metrology Department is to ensure a public guarantee from the point of view of security and accuracy of the weights and measurements. Educating more than 3.34 crore people, particularly those in rural areas where consumers are more susceptible to exploitation, on various subject matters pertaining to consumers' interest being dealt with by different Departments, is a herculean task. In order to achieve this, the Legal

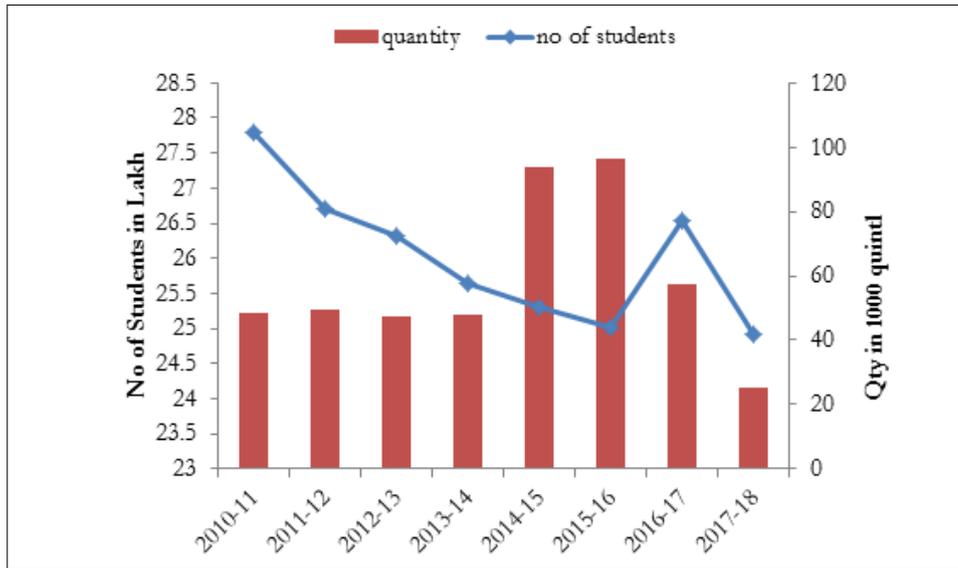
Metrology Department works to implement the provisions of the Legal Metrology Act. The Act is aimed at ensuring the accuracy and standards of weights and measures, and regulating trade and commerce in weights, measures and other goods which are sold or distributed by weight, measure or numbers. In 2016-17, the department conducted several verifications and registered 26,021 cases and imposed a penalty of ₹71 lakh.

Mid-day Meal Programme

The Mid-day Meal Programme in schools is implemented in the State with the financial support of the State government as well as Central assistance. The programme was introduced in 1995 by the Ministry of Human Resources Development, Government of India, to provide nutritional support to primary school going children and to boost universalisation of primary education by increasing enrolment, retention and attendance.

Supplyco is entrusted with the responsibility of providing commodities to the Mid-Day Meal Programme in the State. The required quantity of rice is taken from the Food Corporation of India (FCI). During 2016-17, FCI supplied 57,494 tonnes of rice and, 12,333.5 tonnes of special rice benefiting 26.55 lakh children. It can be seen that even though number of children benefitting from this programme increased from 25.02 lakh in 2015-16 to, 26.55 lakh in 2016-17, the supply of rice decreased to 57,494 ton in 2016-17 from 96458 tonnes in 2015-16. There has been a slight decrease in the supply of special rice too during the above period. During 2017-18, as on 31.08.2017, the corporation supplied 250674.1 tonnes of rice and 124,545.95 tonnes of special rice. There has been no distribution of pulses from 2013-14 onwards. The number of children benefitting from the Mid-Day Meal Programme and quantity of rice supplied to the children is given in **Figure 2.9** and the details of the supply of food grain from 2007-08 to 2017-18 is shown in **Appendix 2.45**.

Figure 2.9
Number of Children and Quantity of Rice Supplied under Mid-Day Meal Programme



Source: Supplyco, 2017

LIVESTOCK DEVELOPMENT

Animal husbandry and dairying have been part of human life since the start of civilisation. They have contributed not only in providing low-cost and nutritious food to millions of people; but also in providing animal power and maintaining ecological balance. There exists a close link between livestock production and agriculture. The sector supports agriculture by providing critical inputs, and can supplement incomes of even those who are engaged primarily in other occupations.

Contribution to National and State Economy

Livestock sector is an important sub-sector of the agricultural sector of the economy. The share of agriculture (including crops, forestry, livestock and fishing) has declined in total gross value added (GVA) of the country since 2011-12, but the share of livestock has remained constant at 4

per cent. Moreover, the share of livestock sector in the GVA of agriculture Sector (at constant prices) has increased from 21.8 per cent in 2011-12 to 25.7 per cent in 2015-16.

In Kerala, the share of livestock in Gross State Value Added (GSVA) from Agriculture Sector is nearly 29 per cent. However, it has shown a marginal fall from 29.35 per cent in 2015-16 to 29.14 per cent in 2016-17. Though GSVA from the sector has increased in absolute numbers, its share in total GSVA of the State has also declined marginally from 3.18 per cent in 2015-16 to 3.08 per cent in 2016-17.

Livestock Population

As per 19th Livestock Census (2012), the livestock population of the country is 512 million which includes 299.61 million bovines, 65.07 million

sheep, 135.2 million goats and about 10.3 million pigs. Compared to the last 18th Livestock Census (2007), when the livestock population of the country was 529 million, the total livestock population of the country showed a marginal decline. However, the number of buffaloes has registered slight increase. The population of poultry has shown an increase of more than 12 per cent from about 649 million (18th Livestock Census, 2007) to 729 million (19th Livestock Census, 2012).

As per the 19th Livestock census (2012), the livestock population in the State is 27.35 lakh. It is 23 per cent less as compared to previous census. The primary reason for this is the decline in the population of cattle and goats (which form the majority share) by 23.62 per cent and 27.9 per cent respectively. Amongst the cattle, 12.51 lakh (94 per cent) are cross bred and only 77 thousand are indigenous, the indigenous breed recording decline of 35.18 per cent as compared to the previous census. The poultry population of Kerala as per 19th Livestock census (2012) is 242.82 lakh, which accounts for 3.3 per cent of the total poultry population in the country, registered 54 per cent increase over the 18th Census. Growth rate in Kerala is higher than the growth rate recorded at the national level. Kerala ranks 8th among States in poultry population in the country. Details of species wise Livestock and Poultry population in India and Kerala are provided in **Table 2.6**.

Employment in Livestock Sector

As per estimate of NSS 68th Round (July 2011 to June 2012) survey on Employment and Unemployment, 16.44 million workers as per usual status (Principal status plus subsidiaries status) were engaged in the activities of farming of animals, mixed farming, fishing and aquaculture in India. The livestock sector holds a considerable share in it.

Major Livestock Products in Kerala

Milk, meat and egg are the major livestock products in the State. Compared to the previous year, production of meat has shown a slight increase, while production of milk and egg has shown a decline. A quick glance at the production of these three livestock products during each of the years during the 12th Plan period is shown in the **Figure 2.10**.

Milk Production

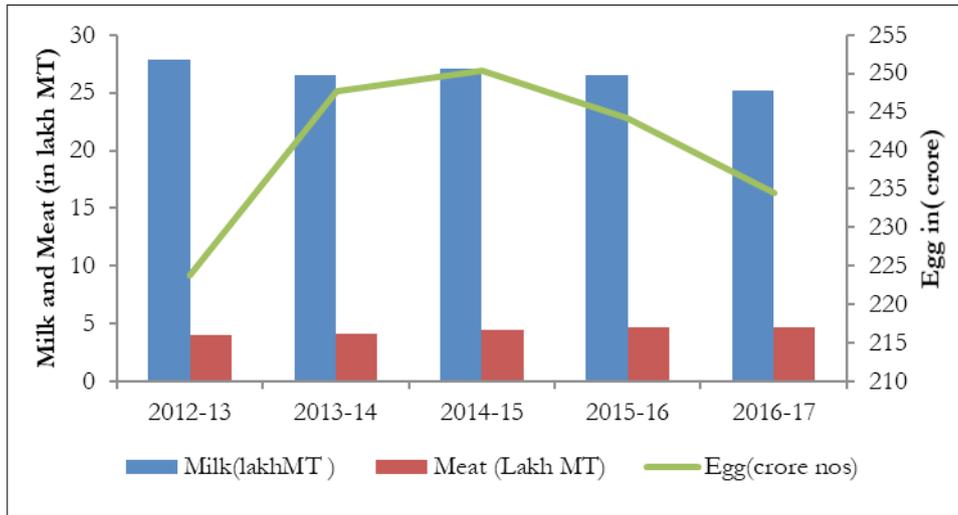
India is the largest milk producing nation in the world. At the national level, milk production has increased steadily over the past three decades. The milk production in India has increased from 155.5 million tonnes in 2015-16 to 163.7 million tonnes in 2016-17, registering a growth of 5.3 per cent. The per capita availability of milk has been

Table 2.6
Livestock and Poultry Population in India and Kerala, in lakh

	Kerala		India	
	18th Census (2007)	19th Census (2012)	18th Census (2007)	19th Census (2012)
Cattle	17.4	13.29	1990.75	1909.04
Buffaloes	0.58	1.02	1053.42	1087.02
Sheep	0.01	0.02	715.58	650.69
Goats	17.29	12.46	1405.37	1351.73
Pigs	0.59	0.56	111.33	102.93
others			20.48	19.88
Total (Livestock)	35.87	27.35	5296.93	5121.29
Total (Poultry)	156.85	242.82	6488.29	7292.09

Source: 19th Livestock Census

Figure 2.10
Production of Milk Egg and Meat during the 12th Plan



Source:

increasing in India over the years. It has increased from 337 g per day in 2015-16 to 352 g per day in 2016-17.

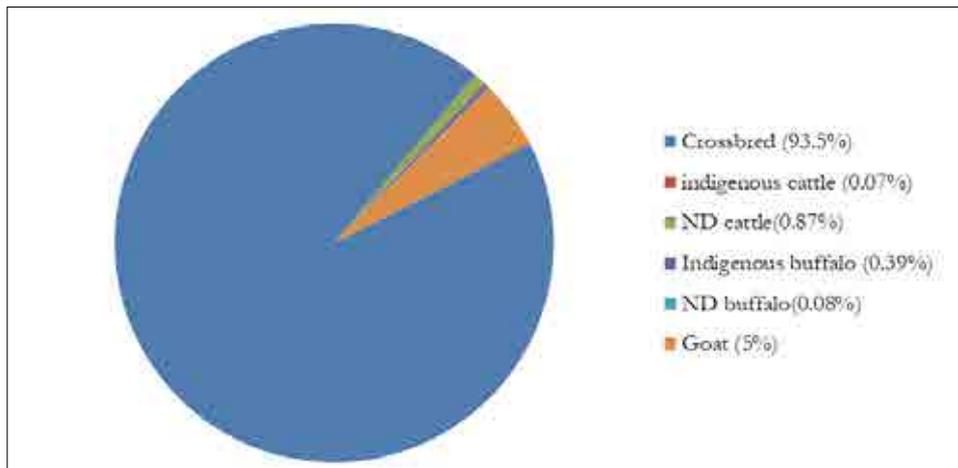
Among the milk producing States in the country, Kerala ranks 14th, with a share of just 1.5 per cent of the total milk production in the country. The production of milk has declined from 26.49 lakh MT to 25.20 lakh MT in 2016-17. The per capita availability of milk in Kerala has been declining during the 12th Plan period. It decreased from 200 gm per day in 2015-16 to 189 gm per day in 2016-17 (which is just above half of the national average).

Out of the 25.20 lakh MT of milk produced in the State, majority share is produced by cross bred cows (93.5 per cent). Indigenous cows produce just 1640 MT of milk (0.07 per cent). The production of milk from goat is 1.26 lakh MT (5 per cent). The rest is contributed by ND cattle, indigenous buffalo and ND Buffalo. Details regarding Species wise milk production in Kerala in 2016-17 are provided in **Figure 2.11**.

Egg production

At the national level, egg production has increased substantially since 2000-01. Total egg production

Figure 2.11
Species wise milk production in Kerala (2016-17)



in India has increased from 82.9 billion numbers in 2015-16 to 88.1 billion numbers in 2016-17, registering a growth of 6.2 per cent. Similarly, there has been a steady increase in per capita availability of egg since 2000-01. It has increased from 66 eggs per annum in 2015-16 to 69 eggs per annum in 2016-17.

The production of egg in Kerala has witnessed drastic changes during the 12th Plan period. The total egg production in the State was at 2.23 billion eggs in the year 2012-13 and then continues to rise over the period and reached at 2.50 billion eggs in the year 2014-15. Since then, it declined to 2.44 billion in 2015-16 and further to 2.34 billion in 2016-17. Kerala ranks 9th among States of India in egg production. Per capita availability of egg had been above the national average during the first four years of the 12th Plan. However it has fallen below the national average in 2016-17. Per capita availability of egg had increased till 2014-15 to reach 70 numbers per annum. It has fallen to 67 in 2015-16 and further to 64 in 2016-17.

About 69 per cent of the total eggs produced in the State is from improved fowl and around 25 per cent is from desi fowl. The contribution of desi duck and improved duck to the total egg production of the State is 2.96 per cent and 2.40 per cent respectively. Details of Species wise poultry production in Kerala are provided in

Figure 2.12. Also as much as 99.18 per cent of the eggs produced in the State come from backyard poultry. Commercial poultry contributes only a very miniscule share, warranting emphasis on backyard poultry in coming years.

With regard to the share of States in the total egg production, Kerala accounts for just 2.7 per cent of the total egg production while it accounts for 3.3 per cent of the total poultry population. In respect of yield, it is much higher than the national average especially for backyard poultry - for improved fowl it is 220 eggs per year while national average it is 145 eggs per year. Whereas for commercial poultry, with respect to desi duck it is at par with national average, and for improved fowl its much above the national average. Details of backyard poultry in India and Kerala are provided in **Figure 2.13.**

Meat Production

Meat production in India has witnessed a steady increase since 2007-08. The total meat production in the country has increased from 7 million tonnes in 2015-16 to 7.4 million tonnes in the year 2016-17, witnessing a growth rate of 5.71 per cent. Meat production in Kerala, which was around 2 lakh MT in the beginning of 11th Plan increased to 4.26 lakh MT in 2011-12, but since then it has hovered around 4 lakh MT. In 2016-17 it showed a marginal increase to 4.69 lakh MT from 4.66

Figure 2.12
Species-wise Poultry Production in Kerala

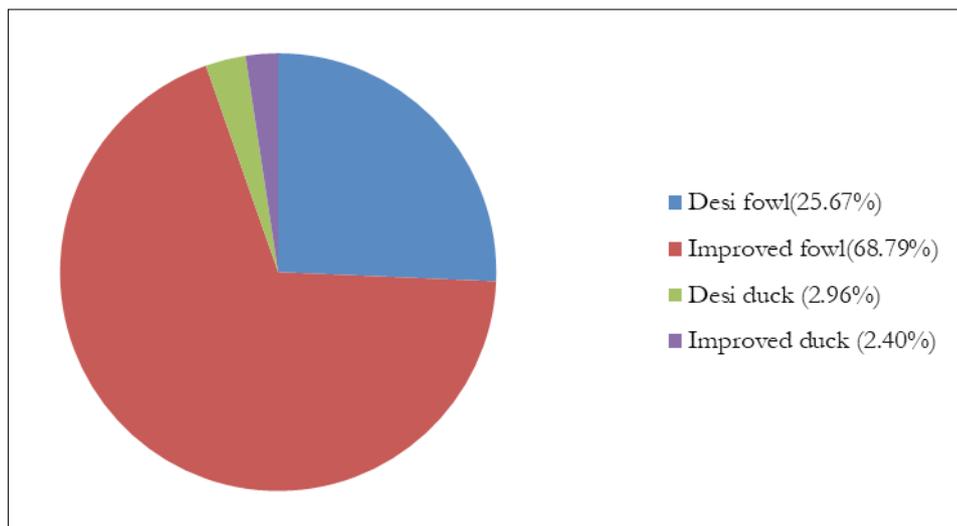
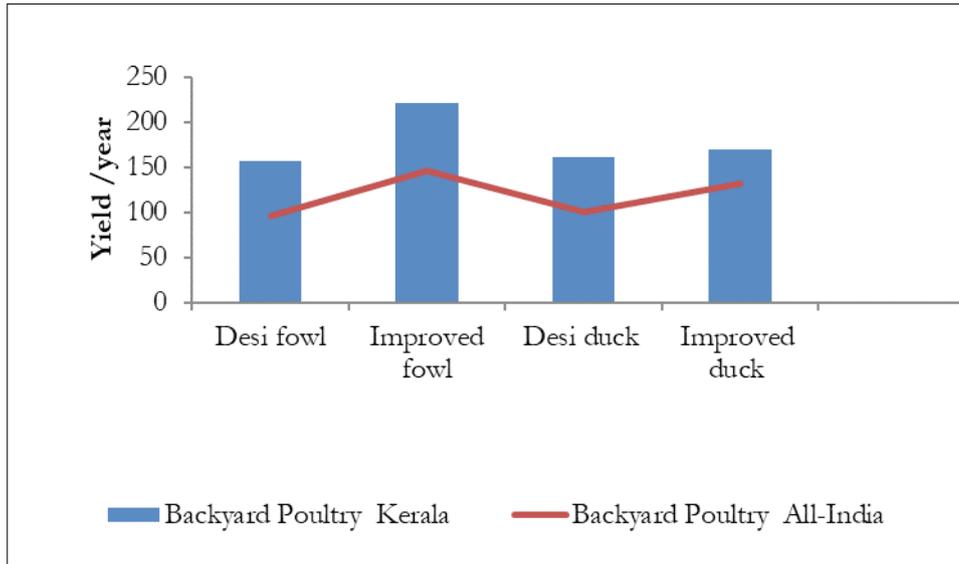


Figure 2.13
Backyard Poultry in India and Kerala



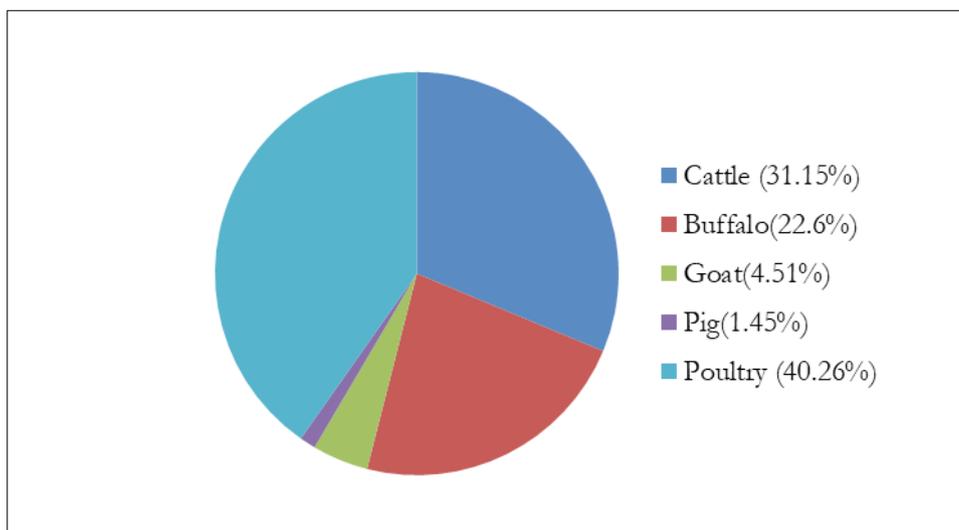
lakh MT in 2015-16. Kerala is the 7th largest meat producing State in the country contributing 6.3 per cent of the meat produced in India. Out of the total meat produced, 40.26 per cent is poultry meat, 31.15 per cent is sourced from cattle and 22.6 per cent is from buffalo. Goat and pig contributes just 4.51 per cent and 1.45 per cent of the total meat production in the State. Details of

species wise meat production in Kerala is provided in **Figure 2.14**.

Milk Marketing

Kerala is one of the States, which is giving highest price for milk to the farmers in the country. The demand for milk is increasing day by day and the

Figure 2.14
Details of Species-wise Meat Production in Kerala



sale of Milma milk showed improvement in the current year. During 2016-17, a total of 5940 lakh litres of milk was procured by the dairy co-operative societies in the State of which 3779 lakh litres were sent to the dairies and 2161 lakh litres were marketed locally by the societies. The average milk procured per day by APCOS in 2016-17 was 1082 MT against the previous year average of 1109 MT. The procurement/day/society in 2016-17 was 360 litres and during 2015-16 it was 372 litres. The procurement of milk by Kerala Co-operative Milk Marketing Federation (KCMMF) decreased to 3834.58 lakh litres against the sale of 4,774.20 lakh litres during 2016-17. Except in Palakkad and Wayanad, sales of milk exceeded procurement. The shortfall between milk procurement and sales was met by arranging milk mostly from State milk federations of Karnataka, Tamil Nadu, and purchase of skimmed milk powder. Details on procurement and sale of milk by different dairies of KCMMF, performance of KCMMF and milk procured by APCOS are shown in **Appendices 2.46, 2.47 and 2.48**. The price revision and price spread of milk from 2010 onwards is given in **Appendices 2.49 and 2.50** respectively.

Feed and Fodder Base

Special focus has been given to fodder and feed production in Kerala to support the development of the livestock sector considering the wide gap in the availability of these two critical inputs. The Dairy Development Department is the nodal agency for fodder development activities in the State. Under the scheme, production and conservation of fodder in farmer fields and Dairy Co-operatives, a new component commercial and massive fodder production in barren lands and wastelands has been initiated. Those lands which are fertile yet remain under-utilised under the ownership of progressive farmers, other individuals, LSGD, PSU etc. will be selected and intensive fodder cultivation activities will be taken up. In 2016-17, fodder cultivation was taken up for 2050 Ha of land and 3.28 lakh metric ton of additional production was ensured. Besides, assistance has been provided to farmers for Azolla cultivation, mechanisation of fodder

cultivation and harvesting, irrigation facilities etc. Innovative fodder development programs under Integrated Dairy Development Program have been implemented in the districts of Kollam and Ernakulam. The total production of cattle feed during 2016-17 was 3.70 lakh metric tonne as against 3.97 lakh MT during 2015-16. The production of feed and fodder are shown in **Appendices 2.51, 2.52 and 2.53**.

Establishing Distinct Dairy Zones in the State

Under the scheme Commercial Dairy Milk and Milk Shed Development Programme, a new component establishing distinct dairy zones has been initiated. 50 potential Dairy Extension Units coming under 14 Agro Ecological Unit (AEU) are selected for implementation of this programme. The component involves induction of milch cows, heifers, Need based assistance to progressive farmers, assistance for construction of scientific cattle shed, mechanisation of dairy farmers, assistance for purchase of milking machine, silage units, and assistance for stress management to milch animals etc.

Breeding Support

Kerala Livestock Development Board (KLDB) is involved in the production and distribution of frozen semen. Compared to 2015-16, semen production increased from 24.47 lakh doses to 27.66 lakh doses during 2016-17. The distribution inside and outside the State decreased from 17.65 lakh doses to 16.62 lakh doses and 10.71 lakh doses to 4.94 lakh doses respectively during this period. Details are shown in **Appendix 2.54**.

The number of Artificial Insemination (AI) centres in the State during 2016-17 was 2515. The number of inseminations done during 2016-17 was 12.32 lakh and calving recorded was 3.10 lakh. The average number of inseminations needed for producing one calf is 4. The details of AI are shown in **Appendix 2.55**. The quality of AI is not improving and so measures to improve the

quality of semen supplied needs to be taken up immediately. Activities of the KLD Board are given in **Appendix 2.56**.

Special Livestock Breeding Programme (SLBP)

The calf rearing programme by subsidising cattle feed for rearing cattle upto 32 months along with health cover and insurance has been under implementation since 1976 onwards. In 2006-07, the scheme was extended to buffalo calves also as a measure to curtail the drastic reduction in the buffalo population. Enrollment of buffalo calves shows a decreasing trend and no buffalo calves were enrolled during the period 2014-15 to 2016-17. In 2016-17, 73,538 calves were enrolled under this programme against 29,164 calves during 2015-16. Year-wise details from 2006-07 onwards are shown in **Appendix 2.57**.

Animal Health Care

With the improvement in the quality of livestock through cross breeding programs, the susceptibility of various diseases including exotic diseases has increased. The animal husbandry department provides veterinary care mainly through 14 district veterinary centres, 50 veterinary polyclinics, 215 veterinary hospitals, 885 veterinary dispensaries, 38 Regional Animal Husbandry Centres, 1359 Veterinary sub-centres, 9 mobile veterinary hospitals, 7 mobile farm aid units and 1 motorboat veterinary hospital. Effective and timely action was taken by the Animal Husbandry Department in liaison with respective administrations and local self-governments to eradicate contagious diseases. Currently mass campaign vaccination programmes like Foot and Mouth Disease Control Programme, rabies Free Kerala Vaccination Programme and ASCAD Poultry vaccinations are being conducted regularly. Data regarding outbreaks, attacks and deaths of major contagious diseases of animals in Kerala for the period from 2010-11 to 2016-17 are given in **Appendix 2.58**. Anthrax, Hemorrhagic Septicemia and FMD were reported during

2016-17. Number of attack of Hemorrhagic Septicemia is very high in 2016-17 compared to 2015-16.

Emergency Veterinary Service During Night Hours

The service of a Veterinary doctor is available only in the day time and it is difficult to get the service during odd hours of the day. Hence a project was formulated to provide the expert veterinary care at block level from 6 pm to 6 am. The service of a registered veterinary practitioner is provided on contract basis. The unit is functioning under the direct supervision of one identified veterinary institution of the block area. Medicines are made available to them. Emergency night veterinary service was established in 65 selected blocks of the State up to 2016-17 and in 2017-18 this will be extended to 85 blocks.

Production of Vaccine in Institute of Animal Health and Veterinary Biologicals, Palode

The Institute of Animal Health and Veterinary Biologicals, Palode is the sole agency engaged in the production and distribution of animal vaccine in the State. The production details of vaccines manufactured are shown in **Appendix 2.59**. During 2016-17, the production of poultry vaccine was 194.95 lakh doses and livestock vaccine was 4.36 lakh doses. Compared to the previous year, production of poultry vaccine decreased by 21.48 per cent and livestock vaccine remains almost the same. Number of vaccinations done during 2016-17 was 26.76 lakh numbers for livestock and 69.52 lakh numbers for poultry. Compared to the previous year, vaccination to cattle increased by 7.47 per cent and vaccination to poultry decreased by 34.64 per cent. Anti Rabies Vaccinations done on dogs decreased from 2.87 lakh numbers to 2.83 lakh numbers in 2016-17. Details are given in **Appendix 2.60**.

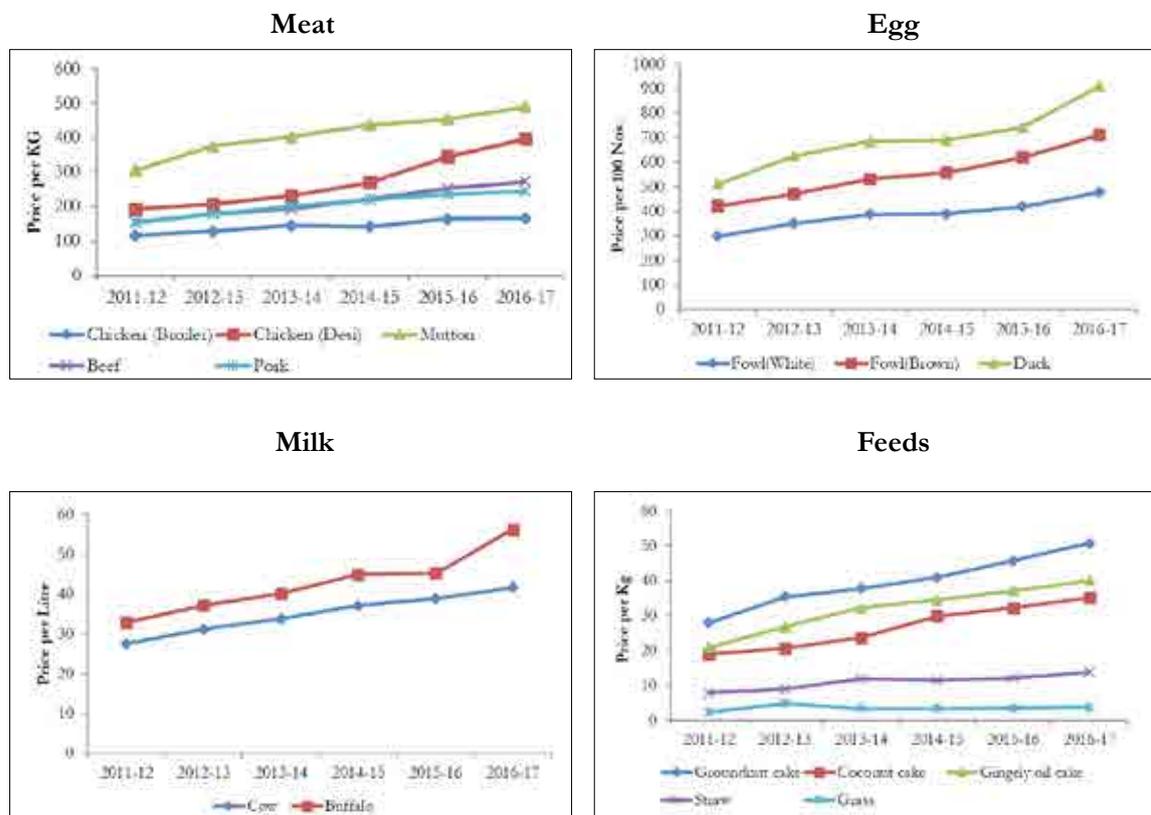
Prices

Average price of important inputs and products of livestock sector for the last six years is presented in Appendix 2.61 and all the products recorded increase in prices during the period. The price of chicken broiler increased by 1.66 per cent, chicken (Desi) by 15.30 per cent, mutton by 7.96 per cent, beef by 8.07 per cent and pork by 2.99 per cent. During 2016-17, the highest increase was in the case of chicken (Desi) (15.30 per cent), followed by beef (8.07 per cent). Compared to 2015-16, the price of fowl-white egg increased by 13.81 per cent, brown egg by 15 per cent and duck egg by 22.31 per cent during 2016-17. Compared to

2015-16, the price of cow milk increased by 7.31 per cent and buffalo milk by 24.38 per cent during 2016-17.

On the input side, the price of straw increased by 13.34 per cent and grass by 5.26 per cent during 2016-17. Compared to the previous year, the price of groundnut cake increased by 10.95 per cent, coconut cake by 9.25 per cent and gingely oil cake by 7.63 per cent during 2016-17 and the increase in the price of inputs is a serious threat to dairy farming and hence the possibility of indigenous source of feeds is to be explored. The trend in average prices of livestock products from 2011-12 to 2016-17 are shown in **Figure 2.15**.

Figure 2.15
Trend in Average Prices of Livestock Products from 2011-12 to 2016-17



Source: Animal Husbandry Department

Physical Achievements in 2016-17

- Emergency Veterinary service during odd hours extended to 65 selected blocks of the State.
- Strengthening of infrastructure facilities of laboratories for improved disease diagnosis and surveillance.
- 73538 calves were newly enrolled under SLBP-Govardhini schemes and scientific rearing subsidised feeding and insurance were ensured.
- Implemented School Poultry scheme and distributed 5 chicks and feed per student. A total of 35050 students in 701 schools were benefited.
- Goat rearing and duck rearing schemes were implemented with an assistance of ₹25000 per beneficiary and ₹1200 per beneficiary respectively.
- Integrated Dairy Development programme for Kollam and Ernakulam districts with Plan outlay of 15 crore.
- 28 New Dairy Co-operatives were registered.
- Fodder cultivation was taken up for 2050 Ha of land.
- 3385 number of Dairy Farmers were assisted for induction of Milch Animals and Heifers.
- Ksheera Gramam Project was implemented in 3 selected panchayats (Eroor Panchayat of Kollam District, Vellangallur Panchayat of Thrissur District and Udayanapuram Panchayat of Kottayam District).
- New regional Dairy labs were set at Kasargod and Kottayam.
- Special Onam quality control drive was carried out at 5 check post (Walayar, Meenakshipuram, Kumily, Aryancavu and Parassala) and 14 District QC units.
- laboratories for improved disease diagnosis and surveillance.
- Comprehensive online management and monitoring system for veterinary services, as part of strengthening e-governance programme.
- Comprehensive Insurance Package for livestock population.
- Production of Rabies Vaccine for human use at IAH & VB Palode.
- New Oncology wing and Centre For Wildlife Studies at CDIO Palode.
- Establishing Distinct Dairy zones in the State.
- Commercial and massive fodder production in barren lands and Wastelands.
- Establishing permanent Milk Quality Testing Facility.
- Implementation of UNIFIED accounting software for dairy co-operatives.
- Comprehensive Health Insurance Programme Covering cattle and cattle owners.
- Implementation of e-governance activity in Dairy Development Department offices
- Geo Mapping of all the offices of Dairy Development.
- Geo mapping of all the Dairy Co-operatives of the State.
- Establishing Mini Dairy Units.

Key Initiatives in 2017-18

- Emergency veterinary service during odd hours extended to 85 selected blocks of the State.
- Strengthening of infrastructure facilities of

FISHERIES

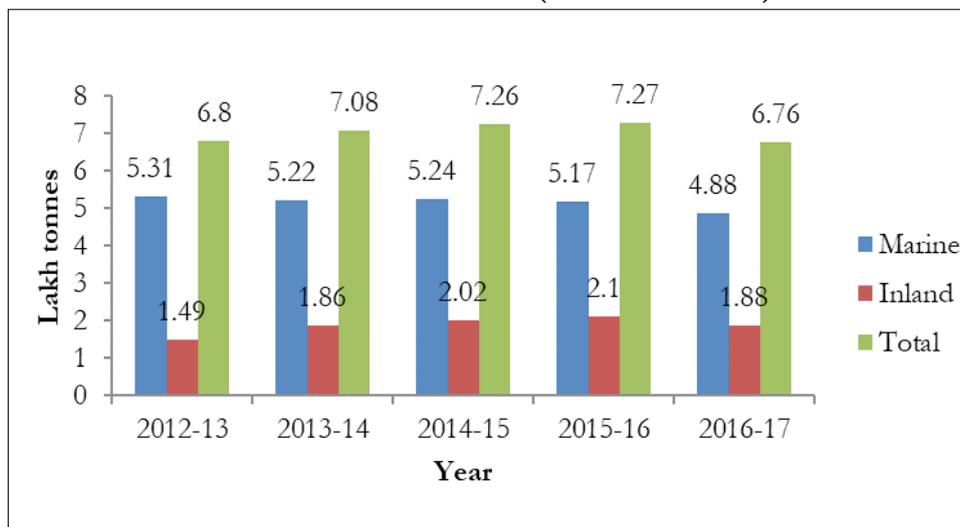
Fisheries are a promising sunrise sector in the national and State economies. Apart from its contribution to GDP and employment, it stimulates growth in a number of subsidiary industries. It is a source of low-cost and nutritious food besides being a source of foreign exchange.

India is the second largest fish producing nation in the world. India is also a major producer of fish through aquaculture and ranks second in the world after China. The total fish production during 2015-16 (provisional) is at 107.9 lakh tonnes with a contribution of 71.65 lakh tonnes from inland sector and 36.3 lakh tonnes from marine sector. Inland fish production constitutes 66 per cent of the total fish production of the country and annual growth rate of production has also been high. Though marine fish production has increased during the recent years, the growth rate is very low. Marine fisheries in India is supposed to be

passing through a crisis due to over capacity and open access nature. The sector engaged over 14.50 million people at the primary level and many more along the value chain. Export earnings from the sector was ₹37,870.90 crore in 2016-17. The sector contributed about 0.9 per cent to the National Gross Value Added (GVA) and 5.43 per cent to the agricultural GVP (2015-16). Analysis of recent trend in exports of marine products suggests that though there was a fall in the quantity and value in 2015-16, it has increased in 2016-17.

The total fish production in Kerala during 2016-17 was 6.76 lakh tonnes, of which marine fish landings accounted for 4.88 lakh tonnes and inland fish production was 1.88 lakh tonnes. Details are provided in **Appendix 2.62**. Year-wise details of fish production in Kerala are provided in **Figure 2.16**.

Figure 2.16
Fish Production in Kerala (2012-13 to 2016-17)



Source: Fisheries Department, GOK.

Compared to 2015-16, marine, inland and total fish production fell in the State in 2016-17. The marine fishery resources of the State is said to have almost attained the optimum level of production. Marine fish landing in Kerala has been declining continuously since 2011-12, with the exception of a marginal increase in 2014-15. High value species among the fish catch is less. However, significant among them are Seer fish, Prawn, Ribbon fish and Mackerel. The quality of these high value species in the total catch ultimately decides the income of the fishworkers. The species wise marine fish landings in Kerala from 2013-14 to 2016-17 are shown in **Appendix 2.63**.

At national-level, 66 per cent of the total fish production is contributed by the inland sector, however at the State level, the share of inland sector is only 28 per cent which is relatively less than the marine sector. The difference in the composition of total production in India and Kerala are brought out in **Figure 2.17**.

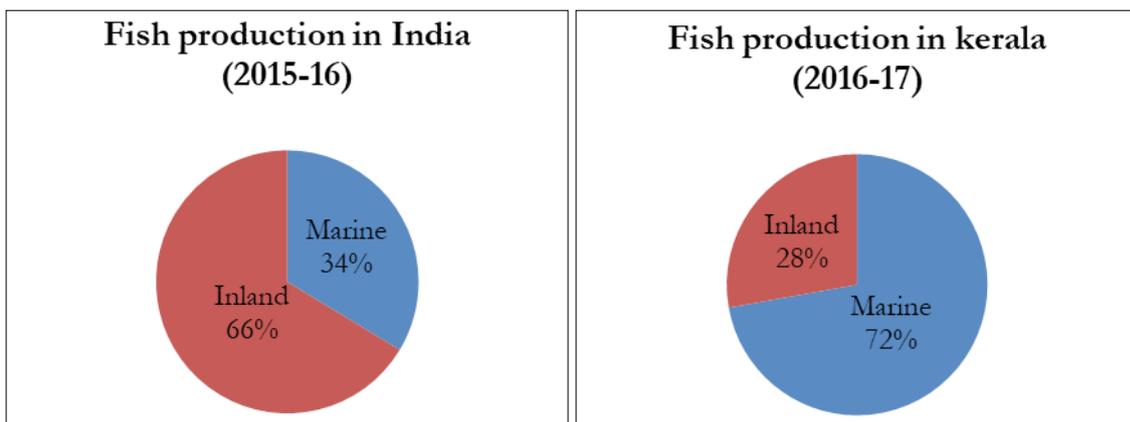
The species-wise inland fish production in Kerala from 2013-14 to 2016-17 are shown in **Appendix 2.64**. Inland fish production had showed signs of improvement from 1999-2000 and it had been increasing till 2015-16. Kerala has not utilised its potential in inland fishing. Kerala has over 7 per

cent of the water bodies in the country, but its share in inland fishing is lower than that of many other States.

Population of the State as per Census 2011 is 334 lakh. The fishworker population is estimated to be around 3.1 per cent of the State's population. They reside in 222 marine fishing villages and 113 inland fishing villages of the State. The fishworker population of the State in 2016-17 is estimated to 10.29 lakh. Out of this, 7.92 lakh fishworkers belong to marine sector while 2.37 lakh fishworkers belong to inland sector. Alappuzha (1.91 lakh) is the district with largest fishworker population, followed by Thiruvananthapuram (1.70 lakh) and Ernakulam (1.37 lakh). The district wise details of fishworker population are given in **Appendix 2.65**.

The number of active fishworkers in the State during 2016-17 was 236,300 of which 89 per cent were males. Thiruvananthapuram district had the largest number of active fishworkers. Active fishworkers are those who are engaged in fishing for their livelihood and are registered with Kerala Fishermen's Welfare Fund Board. During 2016-17, the number of allied workers in fisheries in Kerala was 77,597 of which 81 per cent were females. Their numbers were highest in the district of Alappuzha. Allied workers are those engaged

Figure 2.17
Fish Production in India and Kerala – Relative Share of Marine and Inland Fishing



Source: Fisheries Department, GOK; DAHD, GOI.

in fishery related activities for livelihood and are registered with Kerala Fishermen's Welfare Fund Board.

Fisheries and aquaculture contributes around 8.5 percentage of the Gross State Value Added (GSVA) from the primary sector which is of significance to the State economy. The Gross State Value Added of the State has been increasing over years, but the share of primary sector and that of fisheries sector has been declining. The share of fisheries sector in the State Value Added has declined from 1.12 per cent in 2011-12 to 0.95 per cent in 2016-17. The share of Primary Sector in GSVA has declined from 15.20 per cent in 2011-12 to 11.27 per cent in 2016-17. Such a trend is despite the fact that value added in absolute terms has increased in 2016-17 compared to the previous year. It means that the growth in this sector and sub-sector is slower than the rest. Details regarding the contribution of fisheries sector in GSVA are given in **Appendix 2.66**.

An analysis of the figures of district wise fish production in Kerala shows that the district of Kollam is the leading producer of marine fish followed by Ernakulam and Thiruvananthapuram. These 3 districts together contribute around 74 per cent of the total marine fish production in the State. Ernakulam, Alappuzha, and Thrissur are the leading districts in the case of inland fish production occupying the first, second and third positions respectively. If we look at total fish production, the leading producer is the district of Kollam followed by Ernakulam and Thiruvananthapuram respectively. Details are provided in **Appendix 2.67**.

Kerala has made vital contributions in the export of marine products from the country. During 2015-16, export of marine products from Kerala was 1,59,141 tonnes valued at ₹5008.54 crore. Compared to the previous fiscal, an increase has been recorded in the quantity and value of exports from Kerala. However, the share of Kerala in the total export of marine products from India has fallen both in terms of quantity and value. Details are provided in **Appendix 2.68**.

Key Initiatives during 2017-18

Inland fish production is an area which holds promise for future in Kerala. Insufficient availability of good quality fish seeds was identified as a major problem. To increase the production of fish seeds and to ensure quality, it is required to strengthen the existing hatcheries, nurseries, fish farms and construct new units to the existing infrastructure. During 2017-18, an amount of ₹48.88 crore is allocated for inland fisheries including ₹28.38 crore specifically for Aquaculture. In order to eliminate the problem of loss of life while fishing at sea, fund was provided for procurement of sea rescue craft.

In order to address the relative backwardness of the fisher folk population and the fishing community, the State of Kerala had initiated a new scheme 'Basic infrastructural facilities and human development of fisher folk' in 2015-16. The outlay to the scheme is ₹216 crore in 2017-18 of which ₹150 crore is provided exclusively for rehabilitation of fishworkers who stay within 50 mtrs from the coast, and are vulnerable to sea erosion. Provision for purchase of land and construction of house are built into the scheme.

Performance Review under XII Five-Year Plan and Annual Plan 2016-17

The key elements of the 12th Five-Year Plan in the fisheries sector were launching of a comprehensive coastal area development project covering infrastructure, housing, sanitation, drinking water and livelihood, action plans for augmenting inland fish production to 2 lakh tonnes by the end of the Plan from 1.17 lakh tonnes, enhancement of seed production, strengthening of post-harvest infrastructure like better fish landing and handling facilities, cold chains, storage facilities as well as marketing facilities for the development of the sector and improvement in the production of value added products, micro enterprises, credit support and coverage under social security. Annual Plans are formulated keeping in mind the priorities

set under the Five-Year Plans, and accordingly, the fifth year Plan programme of the XII Five-Year Plan was completed in 2016-17.

The projected outlay during the 12th Five-Year Plan under the fisheries sector was ₹1,471 crore (including Coastal Area Development) which accounts to 1.44 per cent of the total State Plan outlay and 16.66 per cent of the outlay under Agriculture and Allied Sectors. The actual amount budgeted during the five year period of the 12th Five-Year Plan from 2012-13 to 2016-17 is ₹1,420.89 crore and the expenditure reported is ₹1,292.69 crore (91 per cent). Year-wise details are given in **Figure 2.18** and **Appendix 2.69**.

The total outlay under State Plan for Fisheries and Coastal Area Development during 2016-17 was ₹345.03 crore. Total expenditure reported is ₹381.22 crore, which is 104 per cent of the State Plan outlay. The outlay on CSS schemes was ₹63.99 crore and the expenditure during this period was ₹77.44 crore. CSS schemes included a scheme receiving NCDC Assistance where the outlay was 16.50 crore and expenditure was ₹22.50 crore (136.4 per cent). The sector involves multiple agencies implementing umbrella schemes, which involve

large number of components and sub components. There exists a threat of overlapping of schemes and issues in monitoring of implementation. An external monitoring mechanism can be adopted for evaluating the implementation and impact of the schemes implemented by various agencies.

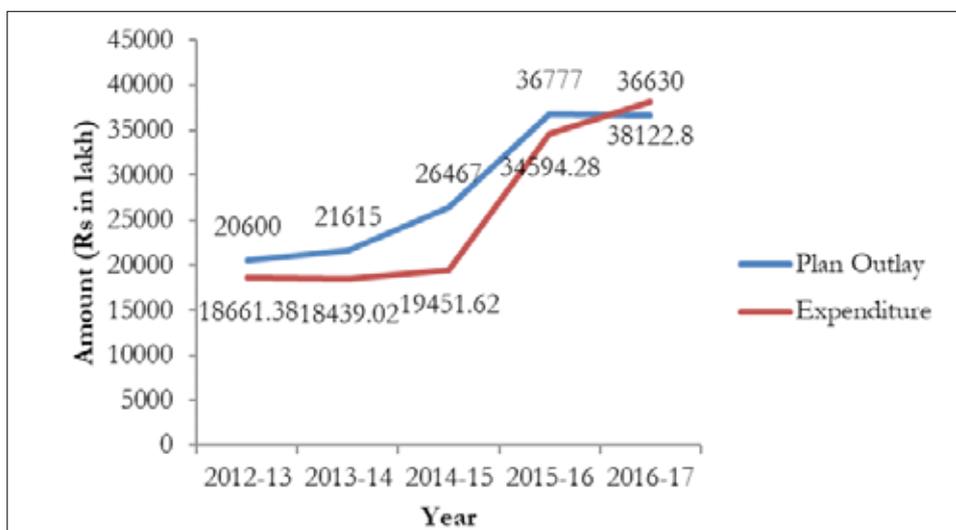
Major Developmental Programmes

The Plan schemes of the Government under Fisheries sector can broadly be classified into the following categories -

- (1) Marine fisheries development
- (2) Inland fisheries development
- (3) Blue Revolution – CSS Scheme
- (4) Extension, Training and service delivery
- (5) Modernisation of markets and value addition
- (6) Social Security to fishworkers
- (7) Development of fishing harbours and management – includes CSS components
- (8) Scheme for the Fisheries University
- (9) Coastal Area Development

In the public sector, 218.32 lakh fish seed and 1145.65 lakh shrimp seed were produced. About

Figure 2.18
Fisheries and CAD – Outlay and Expenditure During 12th Five-Year Plan



Source: Budget Programme Book, 2017-18; Planspace.

8055 Hz of fresh water area, 2040 Hz of brackish water area and 3970 Hz of padasekharam area were brought under fish/prawn culture in 2016-17.

In 2016-17, as part of addressing issues prevailing in the housing sector of fishworkers, assistance at the rate of ₹2 lakh was provided to 2421 fishworkers for construction of new houses. Assistance at the rate of ₹50,000 was provided to 3722 fishworkers for repairing their houses. To address the issue of Sanitation, during 2016-17, assistance at the rate of ₹17,500 was provided to 1688 fishworkers for constructing new toilets.

Harbour Engineering Department and Fishing Harbours

The Government of Kerala has so far completed construction work of 13 fishing harbours and the works of 11 fishing harbours are progressing. The completed fishing harbours are Vizhinjam, Thankassery, Neendakara, Kayamkulam, Thottappally, Munambam, Ponnani, Bepore, Puthiyappa, Chombal, Moplabay, Azheekal and Cheruvathoor. The On-going FH works are Muthalapozhy, Chethi (I and II), Arthungal (II), Chellanam (I and II), Chettuva, Thanur, Koyilandi, Vellayil, Thalai, Manjeswaram and Kasargode. The location of fishing harbours in Kerala are provided in **Figure 2.19**.

Figure 2.19
Location of Fishing Harbours in Kerala



Source: Harbour Engineering Department, GOK.

In 2016-17, Plan support was extended to fishing harbours like Arthungal, Vellayil, Thanoor, Manjeswaram, and Koyilandi. Additionally, fund was provided to complete and operationalise Chettuvali, Cheruvathur and Thalai fishing harbours. Support was also provided to Munakkakadavu Fish Landing Centre. In 2016-17, ₹26.24 crore was provided for fishing harbours under the State Plan. Expenditure reported was ₹33.48 crore.

Construction of fishing harbours was previously undertaken with the help of State fund, fund from Central government (50 per cent and 75 per cent CSS), fund under central schemes like RKVY, and fund from agencies like NABARD (under RIDF). However, Central government has introduced some changes in the funding pattern of CSS schemes and the receipt of central funds during recent years has been very low. This is having an adverse impact on the completion of fishing harbours in Kerala. The State would find the funding of such big projects a big hurdle. Time bound completion schedules for all ongoing fishing harbours need to be worked out. It is also reported that many of the fishing harbours are not in usable condition, and are not operational. Steps need to be taken to ensure that fishing harbours are fully operational throughout the year. The progress of ongoing fishing harbours is shown in **Appendix 2.70**.

Total revenue collected from fishing harbours and fish landing centres has shown a sharp fall of 28 per cent from ₹422.23 lakh in 2015-16 to ₹302.53 lakh in 2016-17. Highest revenue collection has been from Neendakara harbour since 2012-13. Puthiyappa FH is the second highest revenue earner in 2016-17. Together, Neendakara Puthiyappa and Kayamkulam contributed about 58 per cent of the total revenue collection from fishing harbours and fish landing centres in Kerala. Compared to 2015-16, revenue collection has registered a sharp fall during 2016-17 in major revenue earning fishing harbours like Neendakara, Puthiyappa, Thangasserri and Kayamkulam. It is understood that revenue collection depends on the quantity of marine fish catch. Marine fish production is falling but sharp fall and large fluctuations in the

revenue earnings from fishing harbours need to be explored in detail to find out other reasons, if any. The details are given in **Appendix 2.71**.

NABARD Assisted Schemes

Apart from the construction of new fishing harbours, NABARD funds have been used for works like modernisation of existing fishing harbours, construction of fish landing centres, roads, bridges, locker rooms, walkways, etc. During 2016-17, the construction of Koopparakadavu Bridge, Rathikkal Thottipalam Bridge and Kanayamkode FLC were completed.

NABARD under RIDF XV had sanctioned 11 works of which 10 works have been completed. Ten projects including 7 bridges, fish landing centres and walk way amounting to ₹62.91 crore was sanctioned under RIDF XVII. Five works have been completed, and the rest are progressing. Works sanctioned under RIDF XIX include 13 fish landing centres, replenishment of Neendakara fishing harbor, 9 bridge works and 2 road works amounting to ₹76.72 crore. 9 Fish Landing centres, replenishment of Neendakara fishing harbor, 2 bridges and one road work have been completed. Works for 2 roads and a bridge totaling ₹7.82 crore have been sanctioned under RIDF XX and work is progressing. 4 new proposals with a total cost of ₹25.37 crore has been submitted to NABARD for consideration under RIDF XXIII. An outlay of ₹20 crore was provided in 2016-17 for NABARD assisted RIDF projects and an expenditure of ₹37.48 crore has been reported.

Kerala State Coastal Area Development Corporation (KSCADC)

Kerala State Coastal Area Development Corporation (KSCADC), a fully owned State Government Company for the integrating the development activities in the coastal area of the State, undertakes projects in coastal infrastructure development, fisheries infrastructure development, technology acquisition, commercial operation and

consultancy. Presently, it is undertaking works worth around ₹760 crore funded by State Government, Central Government, NFDB, and NABARD. During 2016-17, KSCADC has completed 63 works worth ₹57 crore. In 2016-17, under the Plan scheme “Basic infrastructure facilities and human development of fisherfolk,” KSCADC was engaged in the implementation of 19 projects worth ₹32.10 crore. It included 14 educational infrastructure/education support projects, 4 Health infrastructure projects and a drainage project. The drainage project has been completed. NABARD under RIDF, has sanctioned 11 projects worth ₹31.74 crore in 2016-17. It includes 6 projects for development of Fish farms/hatcheries, 2 projects for development of Fisheries Training Centres, and 3 projects for development of educational infrastructure. Construction of Modern Hygienic fish market at Karikkode in Kollam has been approved in 2016-17 with a total outlay of ₹356 lakh which includes NFDB share of ₹178 lakh.

State government has spent considerable amount of money during the 12th Five-Year Plan period for the development of coastal infrastructure including social infrastructure. It is found that a large number of these works are still incomplete for a long period of time. The progress of schemes has to be evaluated. Schedule for time bound completion of schemes has to be prepared and implemented.

Social Security and Livelihood Support to Fishworker Community

Government of Kerala has placed emphasis on various schemes implemented to ensure social security and livelihood support to fishworker community. Apart from the Fisheries Department, Kerala Fisherman’s Welfare Fund Board and Matsyafed also implement such schemes. Plan support is also available for many such schemes. Some of these schemes are Centrally Sponsored Schemes. Schemes include those for Housing, Insurance, Pension etc apart from those which

enable fishworkers to earn livelihood on a continuous basis. 2.36 lakh fishworkers benefitted from Group Accident Insurance Scheme. Additionally, 77,597 allied workers also benefitted from Group Accident Insurance Scheme. Old age pension was provided to 55,335 fishworkers. Number of beneficiaries under the scheme “Pension for wives of deceased fishworkers” was 9,965. Fund was provided for motorisation of 200 fishing crafts and subsidy was provided to 960 fishworkers for the purchase of fishing gear. 1.9 lakh fishworkers were provided support during the ‘off season’ under the ‘Saving cum Relief Scheme’. Details of such schemes implemented by the Fisheries Department and KFWFB are provided in **Appendix 2.72** and **2.73** respectively. The State has been able to provide greater assistance to the fishworker community, and expand the social security net over the years.

Matsyafed

Matsyafed is an apex federation of 651 primary level Fishworkers Development Welfare Co-operative Societies, of which 335 are in marine sector, 198 are in inland sector and 118 women co-operative societies. The total membership in these societies is more than 4.45 lakh. The Authorised share capital of the federation is ₹150 crore. Matsyafed has organised Self Help Groups within the fishing community and has developed among them, the habit of savings. These groups have mobilised money as thrift. By providing micro finance and interest free loans, Matsyafed has made a significant impact in the area of micro credit. In 2016-17 micro finance support was provided to SHGs which have benefitted 26,400 beneficiaries. 17,928 fisherwomen were provided Interest free loans. Matsyafed has also been successful in enabling the fishworkers have access to vital fishing inputs. 899 fishworkers have benefitted from the scheme providing subsidy for suitable complements of fishing gear. The achievement of various programmes implemented by Matsyafed is given in **Appendix 2.74**.

Society for Assistance to Fisherwomen (SAF) and Women Empowerment

Society for Assistance to Fisherwomen (SAF) is an agency established to enable the overall development and empowerment of fisherwomen in the State. It extends financial, technological and managerial support to fisherwomen to organise as group activity, start micro enterprises and run the business in a sustainable manner. In order to promote alternative livelihood activities especially for development of micro enterprises among fisherwomen, assistance was provided to 320 beneficiaries and capacity building training was provided to 542 beneficiaries. In order to ensure sustainability of existing units, working capital revolving fund was provided to 588 units, avenues for technology improvement was provided to 100 units and capacity building training was provided to 1025 units. 336 fisherwomen benefitted from the Theeranaipunya scheme which seeks to equip fisherwomen below the age of 30 for future. The achievement of various programmes implemented by SAF is given in **Appendix 2.75**.

In the 11th Five-Year Plan, marine fisheries sector achieved growth especially in the area of infrastructure development. The 12th Five-Year Plan strategy was to ensure sustainable growth of Fish and Fisheries for nutrition, food

security and economic growth by ensuring proper utilisation of infrastructure created in the last Plan. Special emphasis was given to conservation and management of inshore fishery resources, enhancement of offshore marine fish production, maximum utilisation of harvested fish and value addition.

As the State enters the 13th Five-Year Plan, Fisheries sector is looked upon with interest due to its immense potential to contribute positively towards development. The sector needs to take upon itself objectives like (a) nutritional security through enhancing fish production and (b) poverty reduction among fisher folk by ensuring distribution of production benefits to the community on a sustainable and equitable basis. These must be achieved keeping in mind the challenges posed by climate change and degradation of environment. The resource base of the State offers ample scope for growth of aquaculture especially in the inland waters. An active role and contribution from LSGIs can bring a revolutionary change in this direction. Resource conservation and elimination of harmful fishing practices need greater emphasis in the future endeavors, since only they can ensure a sustainable catch in the future. With adequate technological support and extension activities, the sector can be expected to do well and be a sunrise sector in the coming years.

WATER RESOURCES

The World Water Development Report (WWDR), 2016 details the vital role of water resources in all sectors of the economy and ecology. Water resources are essential in achieving sustainable development and reaching the Sustainable Development Goals (SDGs). Water productivity in India is very low. In order to promote judicious use of water ensuring “per drop more crop” of water in agriculture, GOI launched Pradhan

Mantri Krishi Sinchayi Yojana (PMKSY) aiming at providing water to every fields of agriculture.

As per the national level statistics, the total cropped area was 1,983.60 lakh ha in 2014-15 and the total irrigated area was 964.57 lakh ha. In the same period, the net area sown was 1,401.30 lakh ha and the net irrigated area was 683.83 lakh ha. In Kerala, the gross irrigated area during the period was 4.69 lakh ha.

Kerala is well endowed with water resources. However, in spite of the copious supply of rainfall, water scarcity problems (in terms of the quantity and quality of water) are still prevalent in different parts of the State. Rainwater, once reaching the surface of the earth, flows either as surface runoff or helps recharge ground water. There is a substantial gap between the Irrigation Potential Created (IPC) and Irrigation Potential Utilised (IPU). The decline in the ratio between IPC and IPU was mainly due to lack of proper operation and maintenance, non-completion of command area development, and incomplete distribution system, etc. There is a need to arrest the declining trend. Water resource management is therefore an interventionist approach. Demand management is an important part of the Integrated Water Resource Management, which helps to use this finite resource effectively.

Live-Storage Capacities of Irrigation Reservoirs

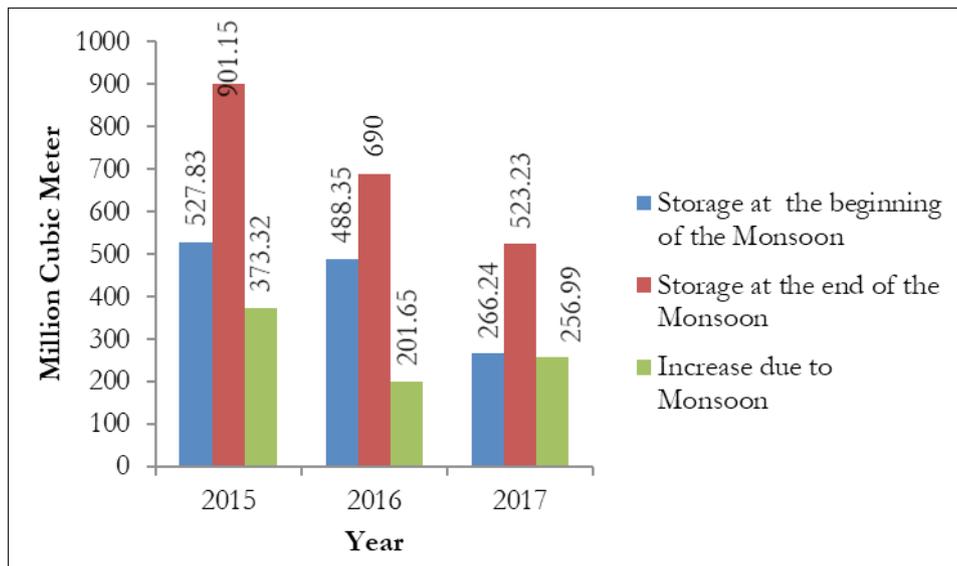
There are 54 dams in the State. Out of this, 14 dams and 6 barrages are maintained by the Irrigation

Department. The live storage of all irrigation reservoirs in the State is estimated as 1,431 Mm³. The live storage position of the reservoirs at the beginning and end of the monsoon during the period 2015 to 2017 is shown in **Appendix 2.76**. During 2017, at the beginning of monsoon, the total storage was 266.24 Mm³ and at the end of the monsoon, the level was raised to 523.23 Mm³, as against the previous year levels of 488.35 Mm³ and 690 Mm³ respectively. The storage position of reservoirs post monsoon during the past three years shows a fluctuating trend, it declined from 373.32 Mm³ in 2015 to 201.65 Mm³ in 2016, and in 2017 it increased to 256.99 Mm³ (**Figure 2.20**).

MAJOR AND MEDIUM IRRIGATION PROJECTS

At present, there are 23 major and medium irrigation projects in the State. This include 19 completed irrigation projects and 4 ongoing projects viz – Muvattupuzha, Idamalayar, Karapuzha and Banasurasagar. These four projects that commenced in 1970s and 1980s, are still continuing with time and cost over runs.

Figure 2.20
Live storage Position in the Reservoirs (2015-2017)



Source: Water Resources Department, GOK.

The unprecedented delay in implementation is the result of various factors including Administrative as well as Technical reasons. Status of these irrigation projects are given in **Appendix 2.77**.

Muvattupuzha Valley Irrigation Project (MVIP)

The Muvattupuzha Valley Irrigation Project, one of the major projects in Kerala envisages the utilisation of the tailrace discharge from the Moolamattom Power House of the Idukki Hydro-Electric Project and the dependable runoff from the catchments of Thodupuzha River. MVIP was started in 1974 with an estimated cost of ₹20.86 crore and was approved by the Planning Commission in June 1983 at an estimated cost of ₹48.08 crore. The project was partially commissioned in 1994. Since then, water distribution is being carried out in the completed stretches of canals. Out of the 35,619 ha potential envisaged through the project, 32,608 ha had been created till date. However, some intervening missing links could not be completed till date. The estimated cost of the project based on 2015 DSR is ₹945.00 crore and the expenditure incurred as on March 2017 is ₹918.32 crore.

Idamalayar Irrigation Project

Idamalayar Irrigation Project is a diversion scheme for diverting water of Periyar river for irrigating 14,394 ha. of cultivable lands in Periyar and Chalakudy basins. The work commenced in 1981 at an estimated cost of ₹17.85 crore. The estimate further revised to ₹750.00 crore as per 2012 SOR. Main components of the project are- (1) A head regulator across the main canal at its starting point. (2) Canal system consisting of – Main canal (32.278 km), Low level canal (27.25 km), link canal (7.575 km).

Main Canal for a full length of 32.278 km had been completed. Works of Low Level Canal completed up to 15th km except at MC road crossing and Railway crossing. Link Canal works completed

up to 2.00 km. Water distribution made possible through Main Canal (32.278 km) and Low Level Canal upto 7.3 km during 2013,2014,2015,2016 and 2017 for the period from January to June, thereby benefitting the agricultural and drinking water need of Malayattoor-Neeleswaram, Ayyampuzha, Manjapra and Thuravoor Panchayats of Ernakulam. The total ayacut achieved (net) is 2998 ha. and the cumulative expenditure as on March 2017 is ₹433 crore.

Karapuzha Irrigation Project

Karapuzha Irrigation Project is the first medium irrigation project in the Kabini Sub Basin of Cauvery River. Cauvery Water Disputes Tribunal has awarded 2.80 TMC of Cauvery water to Karapuzha. Karapuzha Irrigation Project is one of the 99 prioritised project under Accelerated Irrigation Benefit Programme (AIBP). This Project consists of an earthen dam with concrete spillway across Karapuzha River at Vazhuvatta in Vythiri Taluk of Wayanad District for providing irrigation to a net ayacut of 5,221 ha (Cultivable Command Area) in Vythiri, Sulthanbathery and Mananthavady taluks of Wayanad District. Reservoir has a gross storage capacity of 76.50 MCM with live storage capacity of 72.00 MCM.

This project was approved by Planning Commission in 1978 and administrative sanction was issued for ₹7.60 crore envisaging irrigation to cultivable command area of 5,600 ha with ultimate irrigation potential of 8,721 ha. Karapuzha Irrigation Project was partially commissioned on 20th June 2010. The present cost of the project is ₹560 crore (as per DSR 2014). As on March 2017, the cumulative expenditure incurred is 318.08 crore. The total CCA created is 601 ha and the corresponding irrigation potential is 938 ha.

Banasura Sagar Irrigation Project

Banasura Sagar Irrigation Project is the second irrigation project in Wayanad District. This project is in the Karamanthodu basin which is a tributary

of Panamaram river. The project commenced in 1979 with an estimated cost of ₹8.00 crore to irrigate an area of 2,800 ha (net) agriculture land for the second and third crops in two taluks of Wayanad district.

The main canal is 2.73 km long and there are two branch canals – Padinjarathara branch canal having a length 9.030 km and Venniyode branch canal with a length of 5.390 km. Of the total main canal, 2,360 m canal works were completed. Works of both branch canals – Padinjarathara and Venniyode are in progress. The revised estimate of the project is ₹390 crore and the total expenditure as on March 31, 2017 is ₹54.01 crore.

Kuttanad Package

Kuttanad Wetland System comprises of 32 panchayats of Alappuzha, 27 panchayats of Kottayam and 5 panchayats of Pathanamthitta. In order to mitigate the agrarian distress, a package was recommended by MSSRF with a total cost of ₹1,840 crore (2007 price level). Out of this, schemes related to flood control, salinity management and drainage are undertaken by the Irrigation Department for an amount of ₹ 1,517.90 cr. Four schemes were sanctioned by Government of India under Flood Management Programme : KEL-I – Mitigation of floods(14 padasekharams), KEL-II – Mitigation of floods (9 padasekharams), KEL

Box 2.3

Technical Committee for Evaluating the Ongoing Irrigation Projects

A five member Technical Committee for evaluating the ongoing Major and Medium Irrigation Projects in the State was constituted under the chairmanship of Dr. R. Ramakumar, Member, Kerala State Planning Board.

The task assigned to the committee was :

- Assess the status of implementation of these projects
- Evaluate the achievement by technical appraisal/field visits
- Examine the possibility of completing/closing these projects by making the best use of the amount invested.
- Design a road map for the further implementation of these projects

Methodology Adopted

- Conducted physical verification of the project sites during July and August 2017 and identified the major bottlenecks/hindrances
- Organised desk reviews, field-level meetings with people's representatives, representatives of Padasekhara Samithies, farmers etc.
- Discussion with KSREC/LUB on the satellite imagery of the command area of these projects.

Draft evaluation report is in the final stage of preparation.

III – Mitigation of floods (231 padasekharams), KEL IV- Mitigation of floods in 12 watersheds. Works of KEL-I & KEL II were completed. The progress of KEL III and KEL IV are 92 per cent and 62 per cent respectively. Remaining works implemented under the package are in progress.

Irrigation Status

Source-wise net area irrigated during 2016-17 is given in **Appendices 2.78** and **2.79**. The data reveals a declining trend in the net irrigated area ie from 4.14 lakh ha in 2014-15 it dropped to 4.13 lakh ha during 2015-16 and further declined to 3.77 lakh ha during the period under review. Wells contribute the major source of irrigation benefitting 1.22 lakh ha followed by Government canals which irrigate 0.63 lakh ha. But, given the situation, the extent of area benefitted by both wells and canals is declining.

The Gross Irrigated Area shows a fluctuating trend, it increased from 4.69 lakh ha (2014-15) to 4.83 lakh ha (2015-16), but it dropped to 4.57 lakh ha in 2016-17. Details of gross irrigated area and the crops benefitted out of this is shown in **Appendices 2.80** and **2.81**. Coconut, paddy, arecanut and vegetables were the crops that were benefitted the most by irrigation. Nevertheless, the extent of area irrigated for these crops reduced during 2016-17 as against the previous year. Comparison with 2015-16 data shows that, the extent of area irrigated for coconut decreased from 1.65 lakh ha to 1.59 lakh ha and that of paddy from 1.50 lakh ha to 1.31 lakh ha in 2016-17. Thus, the gross irrigated area to gross cropped area declined from 18.4 per cent to 17.7 per cent during 2016-17.

Minor Irrigation

Minor irrigation schemes are those schemes having a cultivable command area up to 2000 ha. These schemes play an important role in Kerala due to various reasons such as lesser investment per hectare, easier returns and management, its

suitability to agro ecology, etc. Minor irrigation scheme comprises of surface water schemes like minor irrigation tanks and canal systems, diversion weirs, lift irrigation schemes and sub-surface schemes. During the 12th Plan period, focus was given to this sector with special emphasis to the development of tanks and ponds, lift irrigation and other minor irrigation structures. Despite having a conducive environment in the State, minor irrigation schemes failed to achieve the full potential due to various reasons. A total amount of ₹1,231.50 crore was expended on minor irrigation sector upto the 12th Plan period with a cumulative physical achievement of 325,565 ha (net). Further, 43,699 hectares of ayacut could be achieved during the 12th Plan period. Details of physical achievements of minor irrigation schemes for the period from 2014-15 to 2016-17 is given in **Appendix 2.82**.

NABARD also provides loan assistance for minor irrigation works under Rural Infrastructure Development Fund (RIDF) through RIDF Tranche I to XXI. 1329 works were completed under various tranches. Under RIDF XXII, sanction was issued to 3 projects at an estimated cost of ₹27.50 crore. Details are given in **Appendix 2.83**.

Haritha Keralam Mission – Water Conservation and Natural Resources Management

Water conservation i.e. Jala Samrudhi is the major objective of the programme. Irrigation department has been entrusted with the responsibility to achieve this objective. This shall be achieved through renovation and cleaning of existing water sources thereby ensuring clean and safe water for drinking and irrigation purposes. The mission intends to integrate all the stake holders in the water sector and to implement various schemes/projects in an Integrated Watershed Approach for Natural Resource Management. The project is implemented in 2 phases. The first phase includes the renovation of ponds and in the second phase it is aimed to rejuvenate and renovate various

water resources such as rivers, backwaters, lagoons, linking of large ponds to irrigation canals and prevention of seepage loss in irrigation canals.

Ground Water Development

Rapid growth in groundwater use is a central aspect of the world's water story. Groundwater is a principle source of domestic water in towns and cities. Agriculture is the largest user of Groundwater. The Ground Water estimation of the State is being done jointly by State Ground water Department and Central Ground Water Board. The estimation is being done based on the groundwater levels of the area.

As per the data on Dynamic Ground Water Resources of Kerala (2013), total annual ground water recharge of the State is 6251.31 MCM and the net annual ground water availability is 5,651.53 MCM. The net ground water availability for future irrigation development is 2,944.62 MCM. The stage of ground water development of our State is 46.68 per cent. Kasaragod leads with 69.81 per cent followed by Thiruvananthapuram with 60.27 percentage. The stage of Ground water development is least for Wayanad district (19.48 per cent). Details are given in **Appendix 2.84**.

Major schemes implemented by the Department are Investigation and Development of Ground Water Resources and scheme for ground water conservation and artificial recharge. Notable achievements during the 12th Plan period were – Ground Water Investigation (44,643 nos), Well construction (8,259 nos), Issuance of NOC to 104 bottling plants, construction of one subsurface dyke at Chittur block, 150 nos of open well recharge structures, 4 check dams, 6 bore well recharging structures, sidewall extension of one existing check dam etc. Detailed physical achievement during the year under report is given in **Appendix 2.85**.

Performance of Irrigation sector during 12th Five-Year Plan

During the 12th Five-Year Plan, the budgeted outlay for the Irrigation sector was ₹2,560.06 crore. Major and medium irrigation grabbed the major share of irrigation outlay during the period (69.43 per cent) followed by minor irrigation (19.63 per cent), Flood Control (9.84 per cent) and Command Area Development (1.09 per cent). Outlay and expenditure details of the sector during 12th Five-Year Plan are shown in **Appendix 2.86**.

FORESTRY AND WILD LIFE

Forests are fundamental for the environment, food security and improved livelihoods. Forests of the future will increase the resilience of communities by providing food, wood energy, shelter, fodder and fibre, incomes and employment to allow communities and societies to prosper and harbouring biodiversity. The concept of “forest health” is very important for its management. India is one of the few countries of the world to have a robust and scientific system of periodic

forest cover assessment and of taking inventories of forests and trees outside forests. Forests in the country vary from the tropical evergreen forests in the Andaman and Nicobar Islands, the Western Ghats and the north eastern States, to dry alpine scrub high in the Himalayan region. Between the two extremes, the country has semi evergreen forests, moist deciduous forests, thorn forests, sub tropical pine forests in the lower mountain zone. As per the India State of Forests Report (2015),

the total Forest and Tree cover of the country is 794,245 sq. km, which is 24.16 per cent of the total geographical area of the country. This includes 92,572 sq. km of tree cover and 701,673 sq. km of forest cover. The total forest cover comprises of 85,904 sq. km of very dense forest, 315,374 sq. km of moderate dense forest and 300,395 sq. km of open forest.

Forests and tree resources in the State can be broadly grouped into (a) those that are categorised as forests primarily under government ownership and management and (b) trees outside forests. The total geographical area of the State is 38,863 sq. km. The recorded area of reserved forests in the State is 11,309 sq. km or about 29.1 per cent of the State's geographical area. As per the 2015 assessment made by the Forest Survey of India, the total forest cover in the State including plantations is 19,239 sq. km. On comparing 2015 FSI report with 2013, it is seen that the extent of open forests in Kerala has increased significantly whereas the area under dense and moderately dense forests have declined.

Out of the total forest cover in the State, Idukki district has the highest forest cover, with 3770

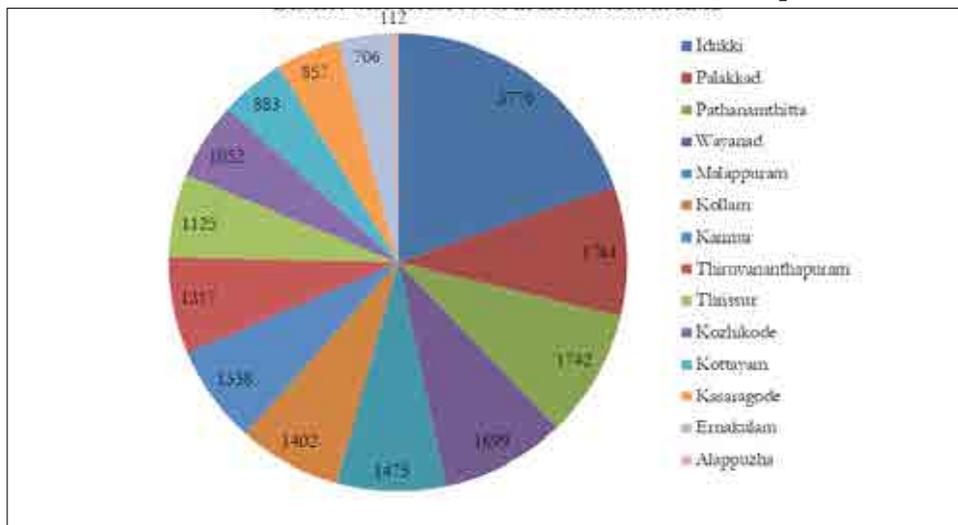
sq. km, followed by Palakkad (1,761 sq. km) and Pathanamthitta (1,742 sq. km) (**Figure 2.21**). District-wise details of forest cover in Kerala is given in **Appendix 2.87**.

In Kerala, out of the 11,309.48 sq. km of total forest area, major area is covered by tropical wet evergreen and semi evergreen (34.28 per cent) followed by Tropical moist deciduous (31.97 per cent). Classification of forest types in the State is given in **Appendix 2.88**.

MANAGEMENT OF NATURAL FORESTS

Natural forests in Kerala are managed mainly for sustaining life support systems and for biodiversity conservation through various programmes. The major activities initiated in 2016-17 were a survey of forest boundaries, forest protection, and regeneration of denuded forests. During the period, as part of boundary demarcation, 12831 cairns and 8.41 km of kayyals (dwarf walls) were constructed. Further, in order to regenerate denuded forests, new plantings were done in 52 ha and the existing plantations were maintained

Figure 2.21
District-wise Details of Forest Cover in Kerala, in sq. km



in 384.28 ha. As part of fire protection activities, 5,978.34 km of fire lines were created and 77,555 fire protection watchers were engaged.

Productivity of Plantations

In Kerala, early plantation efforts were focused on teak and this has remained the most preferred species because of its versatility and superior properties. Emerging demand for industrial raw material in recent years led to increase in establishing pulpwood yielding plantations. In order to meet the requirement, hardwood species were newly raised in 763.06 ha and 2,499.48 ha were maintained during 2016-17. Further, industrial raw materials were newly planted in 967.9 ha and 1280.78 ha were maintained during the above period. Regarding non-wood forest species, new plantations and maintenance were carried out in 124.9 ha and 544.4 ha respectively. Species wise area under forest plantation is given in **Appendix 2.89**.

Human-Animal Interface

Human Animal Interface occurs when the wildlife requirements overlap with those of human populations, creating costs for both communities and wild animals. With increasing population and pressure on forest areas, human wildlife interaction and the resultant conflict is also increasing. This human-animal conflict is reflected in the form of human casualties, injuries, crop damage, cattle lifting, damage to houses and property etc. Recent statistics revealed that human-animal conflict was increasing at an alarming rate in our State. During 2016-17, 7,765 incidents of human-animal conflicts were reported and ₹9.63 crore was paid as compensation to the victims of wild life attack.

Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006

The Forests Rights Act 2006 envisages recognition of rights of forest dependent communities. The

Act recognise the rights of the forest dwelling scheduled tribes and the responsibility and authority for sustainable use, conservation of biodiversity and maintenance of ecological balance of dependent communities in terms of individual and community rights. Accordingly, 25081 titles were issued for individual rights, 164 titles for community rights and 455 claims were settled for development rights. Details on individual rights are given in **Appendix 2.90**.

Major Forest Produce and Revenue from Forests

On analysing the production of major forest produce, it is seen that timber, sandal wood and honey occupies the top position. It is to be noted that, in 2016-17, production of timber was reduced to 31,134.51 cum from 40,909.75 cum during the previous year. Similarly, sandalwood declined to 52,102.35 kg (2016-17) from 68,644.6 kg (2015-16). Meanwhile, honey production increased from 56,176.90 kg to 60,390.05 kg during the review period. Production of major forest produce during 2015-16 and 2016-17 is shown in **Appendix 2.91**.

Reduction in the forest produce was reflected in the revenue from forest products. Recent statistical data revealed a declining trend in the revenue from timber over the last three years. Income from timber which was ₹269.43 crore in 2014-15 declined to ₹240.89 crore in 2015-16 and further declined to ₹222.27 crore in 2016-17. Reason for the declining trend was mainly due to (1) Revenue target of the department is fixed based on timber workings scheduled as per Working Plan of various divisions. But in actual practice the process is delayed mainly due to disparity between local wage rate and forest schedule of rate. (2) The e-auction of timber, which was started by the department two years back is yet to gain popularity among various sectors of bidders. In the process, the bidders coming for e-timber auctions have been less than the previous conventional auctions and in the process there is mismatch between the demand and supply.

Box 2.3

Human-Animal Conflict: Causes, Magnitude and Remedial Measures

Human-animal interface is common at the fringes of forests. In Kerala, the main animals involved are elephants, wild boars, monkeys, tigers, and snakes.

Main Causes

- Habitat fragmentation
- Degradation of forests
- Loss of corridors
- Change in agriculture and land use pattern
- Climatic change

Magnitude of the Conflict

- The conflict is in alarming stage at some pockets. The amount of money being paid as compensation is increasing year by year, thereby reflecting the intensity of the situation
- 145 cases of human death, 361 cases of cattle death and 6,461 cases of crop damage and property loss were reported during 2016-17.

Relief to Victims

- Injury to person: ₹75,000 (max)
- Injury to tribals: Full amount of treatment expense
- Incapacitated permanently: ₹75,000 (max)
- Loss of cattle, crop, house/hut, etc: ₹75,000 (max)
- Loss of human life: ₹5 lakh
- Loss of human life due to snake bite outside the forest area: ₹1 lakh

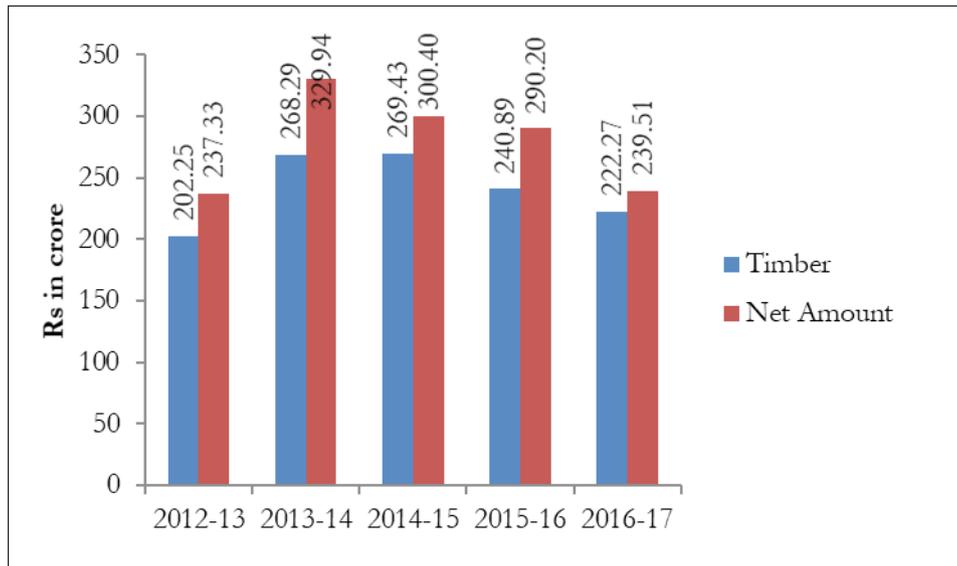
Action Taken

- Solar power fence (1,501 km)
- Elephant proof trench (584 km)
- Elephant proof wall (35 km)
- Kayyala (259 km)
- Bio fence (43 km)
- Stone pitched trenches (3.5 km) were constructed

Trend in revenue from timber and other forest products from 2012-13 to 2016-17 is shown in **Appendix 2.92**. **Figure 2.22** depicts the revenue from forests in Kerala from 2012-13 to 2016-17.

In 2016-17, the share of forestry and logging in total GSVA at basic prices was 0.97 per cent as against 1.03 per cent during 2015-16. The share of primary sector in GSDP has decreased from 10.16 per cent (2015-16) to 9.94 per cent in

Figure 2.22
Forest Revenue in Kerala (2012-13 to 2016-17)



Source: Forest and Wildlife Department, GOK.

2016-17. Contribution of Forestry sector in GSVA is shown in **Appendix 2.93**.

distributed through Social Forestry are given in **Appendix 2.95**.

Biodiversity Conservation and Management of Protected Areas

Forests in Kerala form part of one of the 32 biodiversity hotspots in the world. Improved biodiversity management will help to reduce long term economic and ecological vulnerabilities, ensuring that the unique plant and animal wealth are sustainably managed for the economic development of the State. The State has a well established system of protected areas consisting of sanctuaries, national parks and community reserve. List of Wildlife Sanctuaries and National Parks in Kerala is shown in **Appendix 2.94**.

Social Forestry

Haritha Keralam scheme was started with the objective of greening Kerala by way of distributing seedlings free of cost to schools, higher educational institutions, planting in public lands etc. So far, eight phases of Haritha Keralam scheme have been implemented. Details of seedlings

Overview of 12th Five-Year Plan

The thrust areas of the sector during the period were (1) conservation of natural forests including the rich bio diversity (2) extension of participatory approach in forest management (3) increasing productivity of plantations, mechanisation of forestry operations (4) protection of sandal forests (5) conservation and development of medicinal plants (6) conservation of mangroves and sacred groves (7) application of FMIS and GIS for management (8) promotion of extension forestry – rural and urban forestry (9) sustainable livelihood for alleviation of poverty of forest dependent communities, development of non-timber forest produces (NTFP) and value addition to NTFP (10) mitigation strategies for climate change (11) proactive support to mitigate man animal conflict.

Major Achievements During 12th Five-Year Plan

- Fireline (Forest Protection) – 6599.4 km
- Erecting permanent cairns – 19140 nos

- Construction of kayyala – 8045 m.
- Raising Plantation (Regeneration of denuded forest) – 348.79 ha.
- Maintenance of Plantation – 2514.49 ha.
- Raising plantations (Hardwood) – 2115.37 ha.
- Maintenance of Plantation – 3448.78 ha.
- Raising seedlings – 961500 nos.
- Raising plantations (Industrial Raw Material) – 2949.19 ha.
- Maintenance of Plantation – 5001.85 ha.

During the 12th Five-Year Plan period, ₹786.29 crore was budgeted for the sector and the total expenditure incurred is ₹628.22 crore. Expenditure details are shown in **Appendix 2.96**.

ENVIRONMENT

A clean, healthy, and sustainable environment is now recognised globally and nationally as a basic entitlement of the people. Together with incomes and basic needs such as food, clothing, shelter and health, a clean environment is an integral component of human wellbeing. The environment plays an important preventive role in preventive health care. Any failure in maintaining good-quality environmental services leads to an increase in disease burden, and in household and public expenditure on health care. The origins of environmental problems are often multi-dimensional and may involve several social and economic sectors. At the same time, widespread environmental issues may permit simple solutions with a few critical regulatory measures.

Article 48-A of the Constitution of India authorises the State to protect and improve the environment and the forest and wildlife of the country. Accordingly, Environmental Management Agency, Kerala was constituted in 2007, which was subsequently transformed into the Directorate of Environment and Climate Change in 2010. The Government of Kerala implements several regulatory and promotional measures for environmental protection and conservation mainly through Environment Department. The directorate initially started an assessment of effectiveness of the sectoral environment management programmes, and formulated strategies for

undertaking key environmental initiatives. Major thrust was given on the environment management ensuring a balanced approach towards economic development and cleaner environment. Besides environment management, programmes implemented by different institutions like Kerala State Pollution Control Board and Kerala State Biodiversity Board were coordinated by the Environment Department.

During the 12th Five-Year Plan, in order to encourage environmental protection activities, the Department established eco-clubs, named Bhoomithrasena in colleges across the State in all districts. These clubs have undertaken environmental protection activities of their surrounding areas. Other activities include eco restoration of wetlands, promoting research and development in environmental sciences, climate change environment management and related engineering and technology. Some of the studies supported by the department include carbon sequestration status of selected forest ecosystems of Kerala, development of a native micro algal system for the removal of Green house gases from flue gas and its optimisation studies for biofuel production, studies on the effect of plant secondary metabolites on the control of mosquito vectors etc. During the 12th Five-Year Plan period, budgeted outlay for the three institutions, that is Directorate of Environment, Kerala State

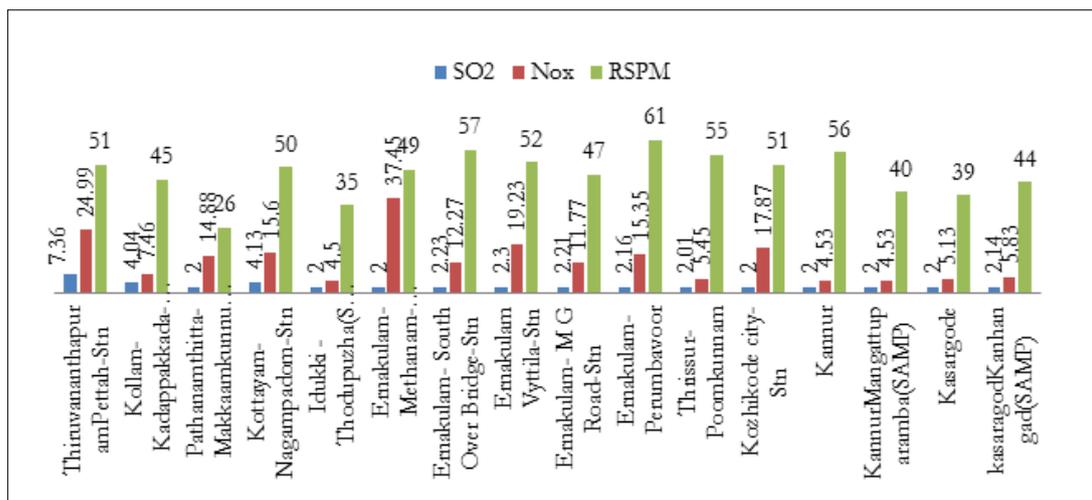
Biodiversity Board, Kerala State Pollution Control Board, together was ₹118.42 crore, of which ₹79.82 crore was utilised (67.40 per cent) for implementing various schemes. Details of 12th Five-Year Plan outlay and expenditure is given in **Appendix 2.97**.

The Kerala State Pollution Control Board (KSPCB) has the mandate to prevent and control the water and air pollution and maintain and restore the wholesomeness of water, air, soil and environment. The KSPCB has strengthened its initiatives for generating baseline data and periodical monitoring of the air and water quality.

Ambient air quality is also monitored by the Kerala State Pollution Control Board for Respirable Suspended Particulate Matter (RSPM), Sulphur Dioxide (SO₂) and Oxides of Nitrogen (NO_x) from 30 stations located in industrial, residential and sensitive areas. As per the Pollution Control Board's Water and Air Quality Directory (2016), at the monitoring stations located in residential area, the Respirable Suspended Particle Matter (RSPM) values exceeded the permissible level of 60 micro gram per cubic meter only at Ernakulam-Perumbavoor (61). SO₂ and NO_x levels are observed to be almost always within the prescribed limits. The measurements of 9 major monitoring stations for 2016 are given in **Figure 2.23**.

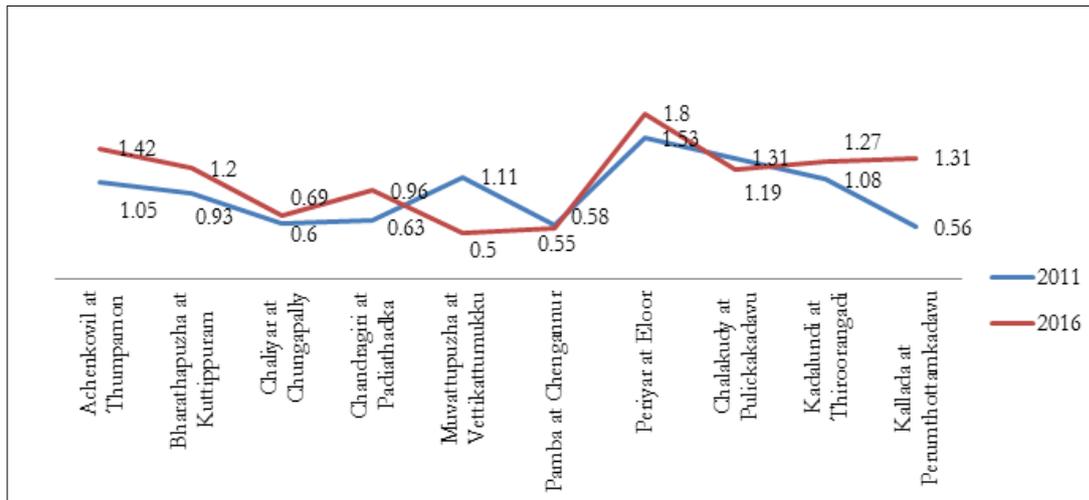
A large number of environmental issues continue to demand attention, ranging from river pollution by sewage and other waste generated by urban and rural settlements to intense noise pollution. Such a wide range of issues demand concerted attention by regulatory authorities especially the Pollution Control Board, whose functioning must be streamlined and strengthened with adequate capacity for implementation, enforcement and the pursuit of punitive legal action where necessary. Kerala State Pollution Control Board is monitoring water quality at 65 river stations, 7 Rivulets, 3 fresh water lakes, 8 estuarine lakes, 6 reservoir stations, 3 canals, 2 ponds and 34 well stations in the State. The monitored data is analysed statistically and compared with the water quality criteria. Central Pollution Control Board has evolved a concept of Designated Best Use (DBU) to define the level of wholesomeness of the different water bodies to be maintained or restored according to the primary use of water body. Based on DBU measures, stretches which has BOD (Biological Oxygen Demand) of 2mg/l or less is a drinking water source without conventional treatment but after disinfection and BOD of 3 mg/l or less can be used for outdoor bathing. As per Annual report of KSPCB (2016), BOD levels at selected river stations shows that these major rivers are not polluted severely, But the trend reveals that as compared to 2011, BOD

Figure 2.23
Annual Average Values of Air Pollutants at 9 Monitoring Stations in Residential Areas of Kerala for 2016



Source: Water and Air Quality Directory, KSPCB

Figure 2.24
BOD Levels at Selected River Stations for 2011 and 2016



Source: Water and Air Quality Directory 2016, KSPCB

levels have increased in 7 river stations during the year 2016. (Figure 2.24)

Under Haritha Keralam mission, Government of Kerala is set to intensify efforts on protecting and conserving Kerala's environment in all its respects. However, as an integrated mission, its scope will include the efforts of multiple departments and not only specifically the Department of Environment.

Biodiversity Conservation

Kerala State Biodiversity Board (KSBB) is an autonomous body under the Environment department. In accordance with the provisions of Biological Diversity Act 2002 KSBB was established in the year 2005 with the mandatory objectives of ensuring the conservation of biodiversity, sustainable utilisation of the resources and equitable sharing of benefits arising out of it.

Kerala is rich in biodiversity but the high density of population and major transformation of the landscape emphasise the urgency for conservation of the floral and faunal diversity and sustainable use of its resources. The State contains more than 4,500 species of flowering plants of which above 1,500 are endemic in nature. Of 1,847 vertebrates of Kerala, 205 (11 per cent) species are listed as threatened in the International Union for Conservation of Nature (IUCN) Red List of

Threatened Species of which 23 are Critically Endangered, 90 are Endangered and 92 are Vulnerable. Ninety-eight per cent of fishes and 87 per cent of amphibians of Kerala have not been included under any Schedule of the Indian Wildlife (Protection) Act (1972) (WPA). Out of 779 marine species 93 per cent is not included in any Schedules of Wildlife Protection Act. The highest level of endemism (between 77-102 species per sub basin) and highest species richness (133-160 species per sub basin) is found in the west flowing rivers Chaliyar, Bharatapuzha, Chalakkudy, Periyar, and Pamba with point endemics in certain cases.

The fragile nature of ecosystem in Kerala is a concern and many natural and man-made causes pose a great threat to its biodiversity. The following conservation initiatives are going on in the State:

- Altogether 863 People Biodiversity Registers (PBR) were prepared. 1022 Biodiversity Management Committees (BMC) were reconstituted during 2016-17 consequent to change in elected people's representatives of LSG's. Assistance of ₹14.00 lakh was distributed for implementation of 11 selected Biodiversity Conservation Projects submitted by various BMCs. In 2016-17, 264 biodiversity clubs were newly registered in various educational institutions.

- Santhisthal, a human made woodlot of Rare, Endangered and Threatened (RET) plants was established in 2.45 acres and financial assistance were given to 17 institutions for establishing “Santhisthal.”

Significant efforts though are still required to implement biodiversity related initiatives based on the information and knowledge obtained through the PBRs. Though there is considerable scope for enhancing revenue from the access and benefit-sharing (ABS) provisions of biodiversity legislation and rules, the current revenue is negligible.

Climate Change

Climate change is an emerging constraint for development. There are issues of the mitigation of greenhouse gas emissions as well as of the adaptation required to deal with the impact of climate change on various sectors. One of the primary consequences of global warming is the stress it will place on agriculture and related sectors. Another such sector is infrastructure development. Coastal areas in general and coastal infrastructure in particular are at risk from sea-level rise. International cooperation in climate change often offers useful knowledge inputs, particularly in terms of scientific and technical knowhow. Nevertheless, aligning international, national and State-level policy for coping with global warming requires careful consideration, ensuring that the developmental aspirations of the population in the region are also given due consideration.

Exposure to climate change can be considered to be high in Kerala due to its unique social, economic, environmental and physical conditions that amplify susceptibility to negative impacts and contribute to low capacity to cope with and adapt to climate related hazards. Maximum, minimum and average temperatures in the State have been consistently warming and 2016 happens to be the warmest on record. Associated with this, the greenhouse gas (GHG) concentration has also crossed the limit of 400 ppm, which would have disastrous effect on agriculture. Concurrently, the

farmers are facing challenges of natural resource degradation, high input costs and frequent weather fluctuations due to anthropogenic climate change.

In Kerala, climate change is beginning to enter the agenda of development planning in recent years. Kerala has adopted a State Action Plan on Climate Change (SAPCC) in 2014, but is largely led by the National Action Plan for Climate Change as far as mitigation efforts are concerned. The SAPCC has identified specific vulnerabilities under the key sectors – agriculture, animal husbandry, water resources, forest and biodiversity, fisheries and coastal resources, health, energy, urban front and transportation, and tourism. The SAPCC envisaged climate change strategies need to be integrated in the development planning process in the State placing the climate change concerns at the forefront of sustainable development and thereby improving the quality of life of the people of the State.

India’s contribution to cumulative global CO₂ emissions so far is approximately only 3 per cent. However, the per capita CO₂ emission in the country increased steadily during 1990-2014. Its per capita greenhouse gas emissions is also low, amounting to only 1.56 tons of CO₂ equivalent in 2010. India is one of the countries on course to achieve the voluntary goal of reducing the Green House Gas (GHG) emission intensity of GDP (Emission Gap Report, 2014, UNEP). India’s Nationally Determined Contribution (NDC) in the Paris Agreement focuses on reducing the GHG emission intensity of GDP to 35 per cent by 2030, a reduction of 33 per cent from 2005 level.

The country has also initiated efforts in climate change adaptation actions. It is universally acknowledged that India will be one of the nation’s that will bear the brunt of the impacts of climate change across many sectors, particularly those closely connected to the biosphere such as crop production, plantations, fisheries, forests, etc. Kerala needs to pay particular concern to climate adaptation while the scope for mitigation action is less than many other parts of the country.

Clean Environment Cess

A major tool proposed to deal with climate change is the introduction of carbon taxes, though globally concerns have been expressed regarding the negative distributional impact of carbon taxes in developing countries. The relatively high cost of fossil fuels in India has acted as an effective carbon tax. The Government of India in its submission of the Intended Nationally Determined Contribution (INDC) to the Paris talks has noted that oil prices amounted to an effective carbon tax of \$140 per tonne of CO₂ for petrol and \$ 64 per tonne of CO₂ from diesel. This is well above the internationally expected “reasonable” tax of \$25 to \$35 per tonne. Government of India introduced clean energy cess on coal in 2010. Through Finance Bill 2010-11, a corpus called National Clean Energy Fund (NCEF) was created out of cess on coal produced/imported for the purpose of financing and promoting clean energy initiatives, funding research in the area of clean energy or for any other purpose relating thereto. The coal cess has been fixed at ₹400 per tonne in the Union Budget 2016-17 and the same has been renamed as Clean Environment Cess.

Climate Finance

There are various national and international funds available to effectively manage and adapt to the impacts of climate change. Some of the important funds available are 1. Adaptation Fund 2. Green Climate Fund (GCF) 3. International Climate Initiative (IKI) 4. Special Climate Change Fund (SCCF) and National Adaptation Fund on Climate Change (NAFCC).

Adaptation Fund

Adaptation fund was established in 2001 under the Kyoto Protocol of United Nations Frameworks Convention (UNFCCC), which became fully functional since 2010, and is committed to climate adaptation and resilience activities. National Bank for Agriculture and Rural Development

(NABARD) is the national implementing entity accredited for the fund in India.

Green Climate Fund

It was established to act as a central global investment vehicle for climate finance, under which industrialised countries would assist developing countries with new finance for public and private sector projects and programmes. Similar to Adaptation Fund, the GCF will give recipient countries direct access to funding through accredited national (NABARD for India), regional and international implementing entities and intermediaries.

International Climate Initiative

It is a funding instrument of the German Federal Ministry of Environment, Nature Conservation, Building and Nuclear Safety (BMBU). It finances climate and biodiversity projects in developing and newly industrialising countries, as well as in countries in transition.

Special Climate Change Fund

SCCF was established in 2001 under UNFCCC to finance activities, programmes and measures relating to climate change that are complimentary to those funded under the Climate Change Focal Area of the Global Environment Facility, and by bilateral and multilateral funding. The investment priorities of SCCF include, adaptation, transfer of technologies, energy, transport, industry, forestry and waste management.

National Adaptation Fund on Climate Change (NAFCC)

The objective of the NAFCC established by the Government of India under the Ministry of Environment Forest and Climate Change (MoEF & CC) is to assist State and Union Territories that are vulnerable to the adverse effects of climate change in scaling up climate change adaptation

interventions, in accordance with the National Action Plan on Climate Change (NAPCC) and State Action Plan on Climate Change (SAPCCs). It had a Budget provision of ₹350 crore for the year 2015-16 and 2016-17. NABARD has been appointed as the National implementing entity and is responsible for implementation of adaptation projects. The State Government Departments are the executing entities and can submit proposals for accessing NAFCC funds.

NAFCC Project in Kerala: ‘Project for promotion of Integrated farming Systems of Kaippad and Pokkali.

The State has secured funding under the NAFCC for a project “Promotion of Integrated farming systems of Kaippad and Pokkali in coastal wetlands of Kerala” to revive 600 hectares (300 hectares of Pokkali wetlands in Thrissur, Ernakulam, and Alappuzha districts and 300 hectares of Kaipad wetlands in Kannur) of coastal wetlands for climate-resilient farming. The total cost of the project is ₹25 crore, and the period of the project is four years (2015-19). The Agency for Development of Aquaculture (ADAK), Department of Fisheries, Government of Kerala, is the executing entity for the project.

3 CHAPTER

INDUSTRY, SERVICES AND TRADE



INDUSTRY, SERVICES AND TRADE

3.1 INDUSTRY

Industrial development is crucial to the socio-economic development of any nation. The industrial sector contributes significantly to employment generation, poverty alleviation and improvement to general standard of living of the people. The growth of industry is also linked to the modernisation of agriculture, development of science and technology, growth of entrepreneurship, self-reliance in defence production, success in international trade, and efficient utilisation of natural resources.

There are many factors favouring industrial growth in Kerala. Those include Kerala's highly skilled labour force and the relatively high levels of consumption in the State. Per capita consumption expenditure in rural Kerala is twice that of rural India. The per capita consumption expenditure in urban Kerala is 1.3 times that of urban India. Therefore, Kerala offers a ready market for several industrial activities. Kerala's geo-strategic location on the international maritime route, with seaports like Vallarpadam and the upcoming Vizhinjam, provides a unique opportunity for export oriented industries. Kerala has three international airports, and a new airport is coming up in Kannur. There is a powerful and vocal Kerala diaspora abroad. However, Kerala's high density of population, poses a major challenge in getting large tracts of land for industries. Development of industrial estates or zones is particularly important in the State.

INDUSTRIAL SECTOR IN KERALA

Industrial sector in Kerala comprises medium and large industries, micro, small and medium enterprises (MSME) and traditional industries. The departments/agencies that deal with medium and large industries are Kerala State Industrial

Development Corporation Ltd (KSIDC), Kerala Industrial Infrastructure Development Corporation (KINFRA), Public Sector Restructuring and Internal Audit Board (RIAB), Bureau of Public Enterprises (BPE) and Centre for Management Development (CMD). The agencies dealing with MSME and traditional industries are Department of Industries and Commerce, Directorate of Handloom and Textiles, Directorate of Coir

Table 3.1.1
Sub Sector-wise Outlay and Expenditure, ₹ in lakh

Sl. No	Name of Department/ Scheme	XII Five-Year Plan		Annual Plan 2016-17		Annual Plan 17-18	
		Outlay	Expenditure	Outlay	Expenditure	Outlay	Expenditure (as on Oct 2017)
1	Medium and Large Industries	130643.0	99932.0	29178.0	18023.3	48296.0	20407.0
2	Department of Mining and Geology	893.0	536.1	84.00	48.8	135.0	88.33
3	Village and Small Scale Industries	169198.0	152328.1	36631.0	39593.9	40446.0	13048.3
Total		300734.0	252796.2	65893.0	57666.0	88877.0	33543.6

Source: Budget Estimate

Development, Khadi and Village Industries Board and Capex. Department of Mining and Geology also comes under this sector. The subsector-wise outlay and expenditure in the Twelfth Five-Year Plan and Annual Plan 2016-17 and 2017-18 are shown in **Table 3.1.1**.

The Government earmarked ₹3,007.3 crore for the industries sector during the Twelfth Five-Year Plan and the expenditure was ₹2,528 crore

(84.1 per cent). In Annual Plans 2016-17 and 2017-18, the outlays for the sector were ₹658.9 crore and ₹888.8 crore respectively. The expenditure in Annual Plan 2016-17 was ₹576.7 crore (87.5 per cent) and in 2017-18, the expenditure reported as on October 2017 was ₹335.4 crore (37.7 per cent). The amount earmarked in Annual Plan 2017-18 for industry sector was 35 per cent higher than the previous year.

Box 3.1.1 **Approach to the 13th Five-Year Plan**

- Increase in industrial production – private, co-operative and public sector enterprises – with funding from multiple sources of investment.
- Effective use of advanced technologies, including biotechnology and nano technology.
- To build a strong manufacturing base in Kerala, priority to be given to industries that have connection with the State's agricultural, natural and marine resources.
- Promotion of food and agro-based industries.
- Long term revival of manufacturing public sector units by rethinking their product line and technologies.
- Transform PSUs into facilitators for high technology enterprises in the private sector
- Make use of the latest advances in biotechnology, biomedical sciences and biochemical engineering to produce new and more value added products.
- Setting up of research institutes in the development and application of biotechnology.

MANUFACTURING

A strong and robust manufacturing sector helps in promoting domestic production, exports and employment growth, all of which can be catalysts for a higher level of development. As per the provisional data from the Central Statistics Office, overall growth of gross value added (GVA) in India for 2016-17 is estimated at 6.6 per cent, and industrial sector growth has declined from 8.8 per cent in 2015-16 to 5.6 per cent in 2016-17 (Table 3.1.2). This is against the background of an overall decelerated global economic activity.

MANUFACTURING SECTOR IN KERALA

As per the quick estimates of Kerala's Gross State Domestic Product (GSDP) for 2016-17 by Department of Economics and Statistics, manufacturing sector in Kerala grew 4.5 per cent at current prices in 2016-17 compared to 9.7 per cent in the previous year. At constant prices (2011-12), the sector registered a growth of 2.2 per cent in 2016-17 as against 12 per cent in 2015-16. The share of manufacturing sector to GSDP at constant and current prices in 2016-17 was 10.2 per cent and 9 per cent respectively. The growth of manufacturing sector from 2012-13 to 2016-17 is given in Appendix 3.1.1.

The trend in growth rate of income from manufacturing sector in Kerala on the basis of GSDP at constant prices from 2012-13 to 2016-17 is shown in Figure 3.1.1.

The income from manufacturing sector in Kerala, after registering a 12.5 per cent growth in 2012-13 declined in 2013-14 (-4.6 per cent). In 2014-15, income from manufacturing grew 2.9 per cent, which went up by 12 per cent in 2015-16. It was 2.2 per cent in 2016-17.

MINING SECTOR IN KERALA

The contribution of mining and quarrying sector to GSDP at constant prices is estimated at ₹2,905 crore in 2016-17, registering a growth of 60.2 per cent over the previous year. The share of mining and quarrying in GSDP at constant prices increased from 0.5 per cent in 2015-16 to 0.7 per cent in 2016-17.

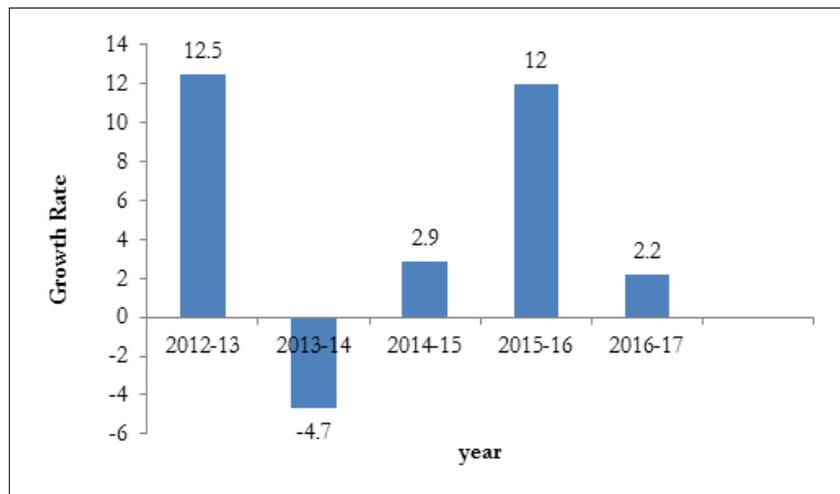
The growth of income from the sector as per estimate of GSDP at constant prices (2011-12) from 2012-13 to 2016-17 is depicted in Figure 3.1.2.

Table 3.1.2
Rates of Growth of Gross Value Added, at Constant Prices (in per cent)

Sl. No	Sub Sector	2015-16	2016-17
1	Mining and quarrying	10.5	1.8
2	Manufacturing	10.8	7.9
3	Electricity, gas, water supply and other utility services	5.0	7.2
4	Construction	5.0	1.7
	Industry, Total	8.8	5.6

Source: Economic Survey 2016-17

Figure 3.1.1
Annual Rate of Growth of Manufacturing Sector in Kerala, at constant prices



Source: Directorate of Economics and Statistics

Figure 3.1.2
Annual rates of growth of income of mining and quarrying sector in Kerala



Source: Department of Economics and Statistics

The income from mining and quarrying sector in Kerala at constant prices was (-)16 per cent in 2012-13, 50.1 per cent in 2013-14, 60.8 per cent in 2014-15, (-)67.2 per cent in 2015-16, and 60.2 per cent in 2016-17.

There were 64 major mineral mines operational in the State as on 31st March 2016. In 2016-17, 64 mining leases for major minerals, 472 quarrying leases for minor minerals, 5,860 quarry permits in minor minerals, and 1,349 dealers' license were

granted. In 2016-17, there were 180 registered metal crusher units in Kerala and the number of prospecting licenses granted for minor minerals was two.

The total area covered by mining leases as on October 2016 is 1,128.9 hectares, of which mineral sand accounts for 558.4 hectares, limestone 245.7 hectares, lime shell/seashell 99.4 hectares, iron ore 86.1 hectares, china clay 70.6 hectares, silica sand 26.5 hectares and quartz 6.8 hectares. Area covered

by graphite is 1.3 hectares and of bauxite is nil. Mineral-wise details of area covered by mining lease are given in **Appendix 3.1.2**.

MINERAL-WISE PRODUCTION AND REVENUE COLLECTION IN 2016-17

The Government gets revenue from minerals mainly by way of royalty. About 95 per cent of the revenue comes from minor minerals and rest from major minerals. The total revenue collected in 2016-17 was ₹138.7 crore.

In 2016-17, Kerala produced 537.3 lakh tonnes of major and minor minerals. Among major minerals, limestone topped the list with 4.1 lakh tonnes followed by ilmenite (1.2 lakh tonnes). Among minor minerals, the highest production was from granite building stone (341 lakh tonnes) followed by ordinary earth (104.6 lakh tonnes).

In 2015-16, revenue from minerals was ₹119.5 crore, which grew 16 per cent to 138.7 crore in 2016-17. Of this ₹6.5 crore was received from major minerals and ₹132.3 crore from minor minerals. In 2016-17, the highest revenue received among major minerals was from lime stone (₹3.3 crore) followed by ilmenite (₹1.5 crore). Among minor minerals, granite building stone contributes the highest (₹81.8 crore) followed by ordinary earth (₹20.9 crore) and laterite (building) (₹11.4 crore) in 2016-17. The production of and revenue from minerals in the State in 2016-17 is given in **Appendix 3.1.3**.

DISTRICT-WISE REVENUE COLLECTED FROM MAJOR/ MINOR MINERALS

District-wise analysis of revenue collection for the year 2016-17 shows that Ernakulam district had the highest collection of ₹33.9 crore (24.5 per cent

of total revenue) followed by Palakkad ₹13.4 crore (9.6 per cent) and Thiruvananthapuram ₹12.4 crore (8.9 per cent). The least revenue collection of ₹1.8 crore (1.3 per cent) was from Wayanad. The district-wise collection of revenue from major and minor minerals is furnished in **Appendix 3.1.4**.

IMPLEMENTATION OF E-GOVERNANCE PROJECTS

The Kerala Online Mining Permit Awarding Services (KOMPAS) is an online system which is implemented through the National Informatics Centre and all modules of the first phase of the project have been developed and implemented in Thiruvananthapuram and Ernakulam districts on a pilot basis from November 2017 onwards.

SCIENTIFIC MINING POLICY – WAY FORWARD

Kerala is evolving a scientific mining policy, which will include:

- An assessment of the State's potential with respect to extractable natural earth materials, such as minerals and rocks and fine aggregates manufactured from rocks.
- Promotion of mining activities that minimise or eliminate damage to the environment including water, air, soil and ecosystem (WASE) and highlights the Social Impact Assessment (SIA).
- Coordinated efforts by the Department of Mining and Geology and Geological Survey of India to map the distribution of extractable earth material in various parts of the State and keeping a Geographic Information Service Geo database accessible to the public.
- Digital Photogrammetric Monitoring of operating mines and quarries to precisely assess and estimate the off take of the extracted material and thereby reducing revenue/royalty loss to the State.

- Modernisation of systems and processes to issue leases/permits and closure plan; adoption of new technologies, and the creation of a rank of professionals in the area of Mining Engineering and Applied Geophysics.
- A single window clearance of lease/permit at the district level, by a committee headed by the District Collector, for opening new mines and quarries.
- A State Level Appellate Authority to review the decisions resolved at the district level.
- A High Power Committee constituted by Government to ensure implementation of the measures outlined in a given time frame.

Conclusion

Mining and quarrying are important economic activities, although the impact they may have on the environment needs to be closely monitored. The government is therefore diligent in adopting regulations to moderate the negative impacts of mining operations. Modern technologies and practices have, to a great extent, reduced the risks associated with mining and quarrying for the environment and economy.

PUBLIC SECTOR UNDERTAKINGS

PUBLIC SECTOR UNDERTAKINGS

Public Sector Undertakings (PSU), both at the Central and State level, have played an important role in the industrialisation and the overall development of the country. They have been set up with the objective to help the country achieve self-sufficiency in manufacturing and technology. As on 31 March, 2016, there were 320 Central Public Sector Undertakings under the administrative control of various ministries/ departments in India. Out of these, only 244 are in operation. In 2015-16, the combined profit of 165 Central PSUs was ₹1,400 billion while there were 78 sick Central PSUs, generating a combined loss of ₹287.5 billion.

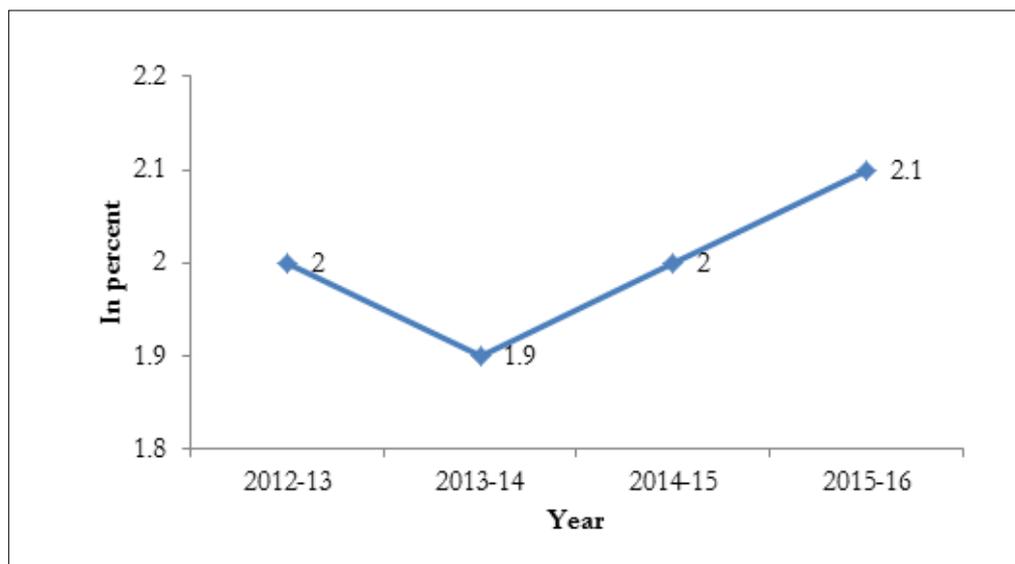
CENTRAL SECTOR INVESTMENT

The aggregate real investment in Central PSUs in India, measured in terms of 'gross blocks',

increased from ₹19,069.3 billion in 2014-15 to ₹20,263.2 billion in 2015-16, a growth of 6.3 per cent over the previous year. The investment in Central PSUs in Kerala in terms of gross block grew 14 per cent from ₹380.2 billion in 2014-15 to ₹433.5 billion in 2015-16. The State's share in total investment by Central PSUs increased from 2 per cent in 2014-15 to 2.1 per cent in 2015-16 (Public Enterprises Survey 2015-16). Among Indian States, Maharashtra was ranked first with respect to shares in investment by Central Public Sector Undertakings (with a share of 8.8 per cent) followed by Uttar Pradesh (share of 6.4 per cent), Tamil Nadu (6.1 per cent) and Orissa (6.1 per cent). Details of Central Sector investment in Kerala from 2012-13 to 2015-16 are given in **Appendix 3.1.5** and Central Sector investment in selected States as on 31st March, 2016 are given in **Appendix 3.1.6**.

Kerala's share in investment Central PSUs from 2012-13 to 2015-16 is exhibited in **Figure 3.1.3**. It may be seen that the share of Kerala has declined in 2013-14 and started increasing thereafter.

Figure 3.1.3
Share of Kerala in investment by Central PSUs, in per cent



Source: Public Enterprises Survey 2015-16

STATE PUBLIC SECTOR UNDERTAKINGS

In Kerala, State Public Sector Undertakings play a crucial role in the development of the economy, especially in the manufacturing sector. PSUs consist of State Government companies and Statutory Corporations established to carry out activities of commercial nature. As per the report of the Comptroller and Auditor General of India on Public Sector Undertakings in Kerala, there were 128 Public Sector Undertakings as on 31 March 2016. Out of the 128 Government companies, 113 (109 Government Companies and 4 Statutory Corporations) are currently working while 15 are non-working PSUs. The working PSUs in Kerala registered a combined turnover of ₹198.7 billion (which is equivalent to 3.4 per cent of State's GSDP). The working PSUs had accumulated a loss of ₹3,136.8 crore and the total investment as on 31 March 2016 in 128 PSUs was ₹19,786.9 crore. An analysis of the latest finalised accounts of all working PSUs in the State revealed that the total profit of 50 PSUs was ₹395.5 crore whereas the total loss of 56 PSUs was ₹10,19.3 crore. Three working PSUs had no profit or loss.

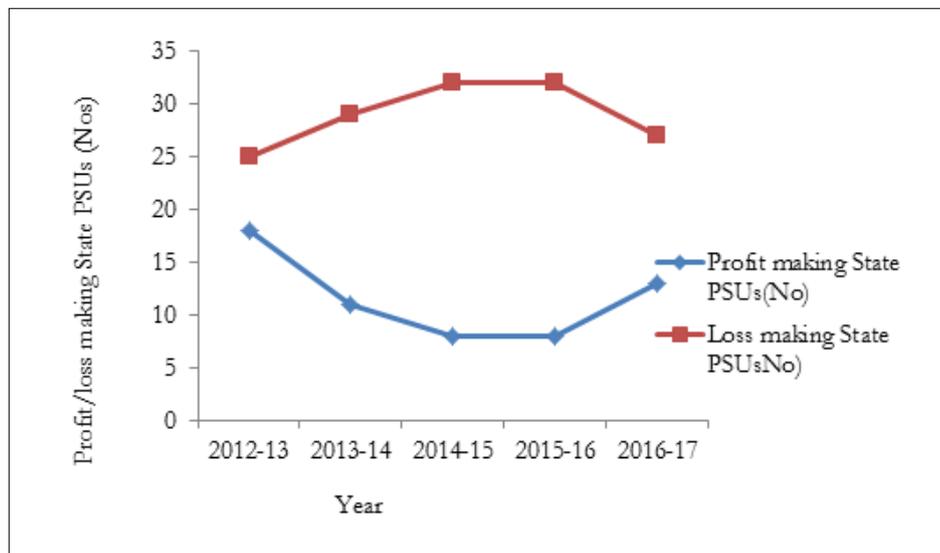
STATE PUBLIC SECTOR UNDERTAKINGS UNDER INDUSTRIES DEPARTMENT

Under the Industries Department, Government of Kerala, there are 40 PSUs, of which 7 are in chemical sector, 4 in electrical sector, 6 in engineering sector, 3 in electronic sector, 8 in textile sector, 2 in ceramic sector, 6 in traditional sector, 1 in wood based sector and 3 in development sector. Performance trend of 40 State PSUs from 2012-13 to 2016-17 is depicted in **Figure 3.1.4**.

The combined value of production and turnover of 40 State PSUs under the Industries Department from 2012-13 to 2016-17 are shown in **Figure 3.1.5**.

It may be seen that there has been no significant changes in the total turnover and total value of production of these State PSUs for the last five years. The combined net profit made by all 40 State PSUs under the Industries Department was ₹110.41 crore in 2012-13. However, from 2013-14 onwards, the combined net profits

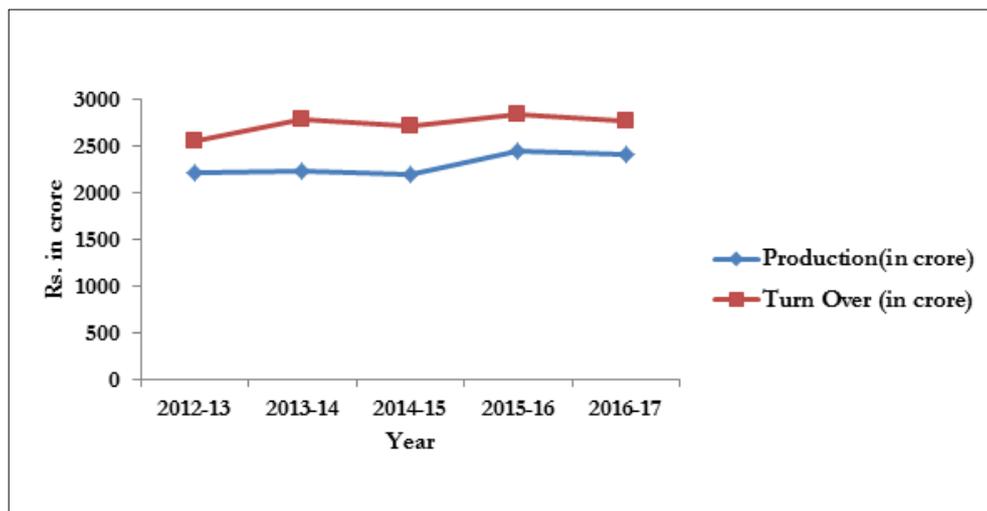
Figure 3.1.4
Performance Trend of Public Sector Undertakings under
Industries Department*



Source: Public Sector Restructuring and Internal Audit Board

*Excluding KINFRA

Figure 3.1.5
Value of Production and Turnover of State PSUs under Industries Department,
Government of Kerala*



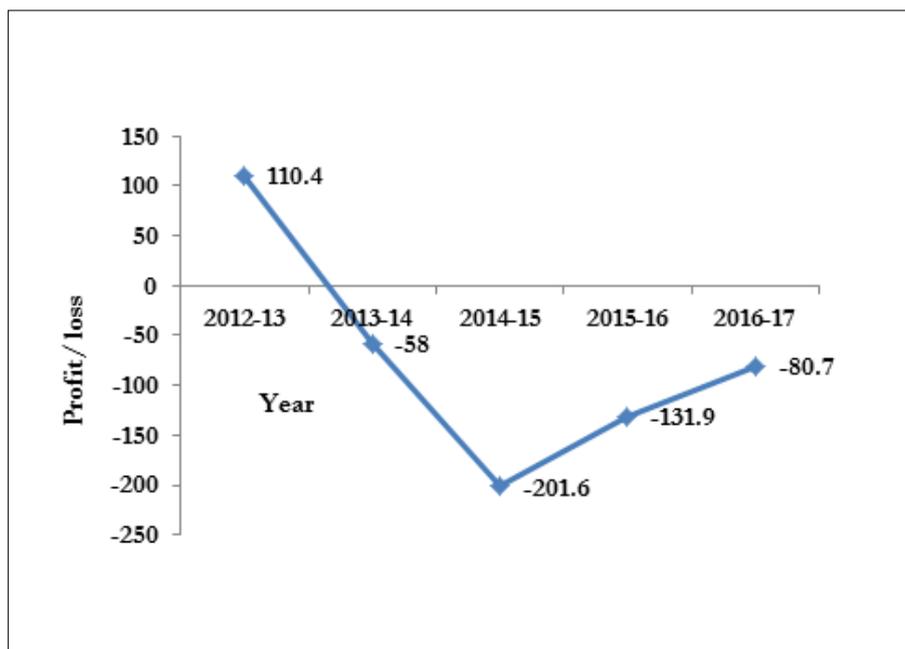
Source: Public Sector Restructuring and Internal Audit Board

*Excluding KINFRA

of these State PSUs has been negative. It was (-)₹131.9 crore in 2015-16 and (-)₹80.7 crore in 2016-17. The performance of State PSUs under Industries Department during the last 5 years is given in **Appendix 3.1.7**.

The trend of net profit/loss made by State PSUs during the last five years is shown in **Figure 3.1.6**. Erosion of working capital, lack of timely up-gradation of technology, limited product diversification, inability to cope up with the

Figure 3.1.6
Net Profit/Loss of State PSUs Under Industries Department



changing market demand, increase in cost of production, tough competition from other firms, competition from cheap imports and mounting financial liabilities (including statutory payouts) have adversely affected the performance of State PSUs. The sector-wise financial performance of State PSUs under Industries Department during the Twelfth Five-Year Plan is shown in **Table 3.1.3**.

PSUs under chemical and electronic sectors contributed to the better performance of PSUs in the industry sector in 2016-17. At the same time, PSUs in the textile sector recorded large losses, pulling down the overall performance of PSUs. The total value of production in the 40 State PSUs under the Industries Department fell from ₹2444.4 crore in 2015-16 to ₹2,421.2 crore in 2016-17, registering a fall of 0.9 per cent. Turnover of these State PSUs also declined 2.4 per cent in 2016-17 over the previous year. Details of PSU-wise turnover and profit/loss from 2012-13 to 2016-17

and 2017-18 (as on 30th August, 2017) are shown in **Appendix 3.1.8**.

The increased dependency on budgetary support even for continuing regular operations of PSUs was a major concern during the Twelfth Five-Year Plan. However, from the last year of the Twelfth Five-Year Plan (2016-17) onwards, major initiatives for strengthening and revamping of PSUs under the Industries Department are being undertaken. Five units namely Travancore Titanium Products Ltd., Travancore Cochin Chemicals Ltd., Traco Cable Company Ltd., Steel Industrial Forgings Ltd. and Transformers and Electricals Kerala Ltd. have seen a turn around in 2016-17. But in 2017-18, PSUs under Industries Department have made remarkable achievements. The combined net profit made by all 40 State PSUs as on 30th August, 2017 was ₹21.5 crore. It is notable that these PSUs have registered positive combined net profit after incurring net combined losses for

Table 3.1.3
Financial Performance of State PSUs Under Industries Department

Items	2012-13	2013-14	2014-15	2015-16	2016-17
Chemical					
Total Units (Nos)	7	7	7	7	7
Plan fund allocation, ₹ in crore	5.5	9.4	22.0	10.0	19.7
Turnover, ₹ in crore	1132.9	1216.7	1123.1	1191.5	1324.5
Net profit, ₹ in crore	106.1	19.3	-43.7	12.9	44.2
Textile					
Total Units	8	8	8	8	8
Plan fund allocation, ₹ in crore	27.6	47.1	24.6	38.1	42.3
Turnover, in crore	167.3	149.5	139.2	96.3	82.2
Net profit, incrores	-23.1	-46.8	-58.6	-72.2	-71.1
Engineering					
Total Units	6	6	6	6	6
Plan fund allocation, ₹ in crore	35.1	20.5	13.7	9.0	24.9
Turnover, ₹ in crore	135.0	132.7	131.4	121.5	118.3
Net profit, ₹ in crore	-14.9	-18.3	-19.9	-34.2	-23.0
Electronics					
Total Units	3	3	3	3	3
Plan fund allocation, ₹ in crore	6.2	11.3	7.0	2.2	5.00
Turnover, ₹ in crore	379.5	381.0	368.5	483.9	450.6
Net profit, ₹ in crore	4.6	2.8	2.5	0.6	2.4
Electrical					
Total Units	4	4	4	4	4
Plan fund allocation, ₹ in crore	23.1	18.8	14.0	18.5	15.5
Turnover, ₹ in crore	262.7	380.0	360.7	398.6	420.2
Net profit, ₹ in crore	-17.2	-9.2	-46.3	-47.2	-15.3
Traditional and wood based					
Total Units	7	7	7	7	7
Plan fund allocation, ₹ in crore	12.3	6.5	7.6	2.4	4.9
Turnover, ₹ in crore	91.4	86.8	97.3	102.7	90.95
Net profit, ₹ in crore	-10.0	-14.1	-15.1	-20.2	-19.0
Ceramic					
Total Units	2	2	2	2	2
Plan fund allocation, ₹ in crore	6.0	8.6	2.0	7.6	5.1
Turnover, ₹ in crore	9.4	12.3	15.2	5.5	4.1
Net profit, ₹ in crore	-3.8	-3.5	-3.5	-11.1	-9.7
Development					
Total Units	3	3	3	3	3
Plan fund allocation, ₹ in crore	0.0	0.0	0.0	10.71	5.50
Turnover, ₹ in crore	321.2	401.5	432.2	393.0	231.8
Net profit, ₹ in crore	68.6	45.3	34.7	38.5	10.2

Source: RLAB

Box 3.1.2**Encouraging Trends in Public Sector Undertaking's Performance**

State PSUs under the Industries department have been showing sign of improvement from 2016-17 onwards. Thirteen State PSUs under the Industries Department reported profits in 2016-17 as against only eight in 2015-16. The total profit made by the profit-making PSUs increased from ₹94.7 crore in 2015-16 to ₹99.8 crore in 2016-17. Major profit making units in 2016-17 were Kerala Minerals and Metals Limited (₹40.4 crore), Kerala State Industrial Development Corporation Ltd (₹32.1 crore), and Travancore Titanium Products Limited (₹8.5 crore).

The number of loss-making State PSUs decreased from 32 in 2015-16 to 27 in 2016-17, and the total losses made by loss-making State PSUs during this period also decreased from ₹226.6 crore to ₹180.5 crore. Major loss-making State PSUs during 2016-17 were Kerala State Textile Corporation Ltd. (₹29.4 crore), Kerala Small Industries Development Corporation (₹16 crore) and the Travancore Cements Limited (₹10.2 crore).

4 years. An amount of ₹270 crore was allocated in the State budget for 2017-18 specifically for various projects as part of capacity enhancement and also to meet some of the working capital needs. Steps have also been taken to formulate action plans to optimize the operation in all units through capacity augmentation and introduction of new products. Details of modernisation/expansion projects of Public Sector Undertakings, being implemented in 2017-18 are shown in **Appendix 3.1.9**.

*PUBLIC SECTOR
RESTRUCTURING AND
INTERNAL AUDIT BOARD
(RIAB)*

Public Sector Restructuring and Internal Audit Board (RIAB), constituted in 1993, undertakes

reform initiatives in state-owned enterprises in Kerala. RIAB has been playing a major role in the rejuvenation and revival of PSUs under the Industries department. Major responsibilities of the agency include performance planning and monitoring of PSUs, enterprise reconstruction, capacity building, recruitments in PSUs and governance advisory support to State PSUs.

JOINT STOCK COMPANIES

There were 27,305 joint stock companies in Kerala as on March 2017, of which 25,714 (94.2 per cent) were private limited companies and 1,591 (5.8 per cent) were public limited companies. In 2016-17, there were 3,711 new companies registered (3,477 Private Limited and 234 Public Limited).

Box 3.1.3**Major Initiatives for Performance Improvement of PSUs**

- Induction of professional management
- Capacity enhancement of profit making PSUs
- Modernisation and technology up-gradation of loss making PSUs
- Increased budgetary support for capital expenditure and synergy among PSUs

The numbers of companies wound up/dissolved/struck off/amalgamated in 2016-17 were 297. Three public companies were converted to private companies and 3 companies were converted from private to public companies. Total number of government companies as on March 2017 was 152 (83 public limited and 69 private limited companies).

There were 14,648 (1,285 private and 13,363 public) joint stock companies started by women entrepreneurs in Kerala as on March 2017. Details of joint stock companies working in Kerala are given in **Appendix 3.1.10**.

INDUSTRIAL FINANCING

KERALA FINANCIAL CORPORATION (KFC)

Kerala Financial Corporation (KFC) has been playing a major role in the industrialisation of Kerala. The main objective of KFC is to extend financial assistance to micro, small and medium enterprises (MSME) in the manufacturing and services sectors. Financial assistance is provided in the form of term loans, working capital loans and special schemes. KFC is a member of Credit Guarantee Fund Trust for Micro and Small Enterprises.

Activities of the Corporation are the following.

- Sanction of term loans to new micro, small and medium enterprises in the manufacturing and services sector.
- Sanction of term loans to existing industrial concerns and services sector units for expansion/modernisation/diversification.
- Sanction of working capital loans to meet working capital requirements of industrial/service enterprises under special schemes.
- Special schemes for financial assistance to civil contractors.
- Special scheme for financial assistance for producing feature film and TV serials.

- Special scheme for modernisation, upgradation and expansion of existing cinema theatres and establishment of new multiplexes.
- Special scheme for purchase of lab equipments/waste management.

In 2016-17, the operating profit of KFC was ₹7.9 crore and net profit was ₹5.7 crore. The corporation sanctioned financial assistance of ₹385.3 crore in 2016-17 as against ₹1,026 crore in the previous year. Amount disbursed in 2016-17 was ₹655.3 crore as against ₹838.4 crore in 2015-16. The changes in the Government policies and other external factors affected business in certain sectors such as hospitality, tourism, mining and real estate. The total recovery in the year 2016-17 was ₹874.3 crore compared to ₹758.2 crore in 2015-16. Performance of KFC during the last five years is given in **Appendix 3.1.11**. The details of loan operations and industry-wise classification of loans in 2016-17 of KFC are shown in **Appendix 3.1.12** and **Appendix 3.1.13**.

KERALA STATE INDUSTRIAL DEVELOPMENT CORPORATION (KSIDC)

Kerala State Industrial Development Corporation Ltd. (KSIDC), a wholly owned company of Government of Kerala, was established in 1961, for the promotion and development of medium and large-scale units in the State. KSIDC has initiated major industrial and infrastructure projects, which are strategically important to Kerala's industrial and economic development. KSIDC also plays a vital role in entrepreneurship development in the State. As the nodal agency for foreign and domestic investment in Kerala, KSIDC provides comprehensive support to investors besides processing various incentives, schemes and facilitating constant interaction between the Government and the industrial sector.

In financial year 2016-17, KSIDC sanctioned projects worth ₹180.5 crore, with direct term loan assistance of ₹85.8 crore. These projects are expected to generate employment for 1,200 persons directly and indirectly. The corporation achieved ₹64.1 crore of disbursements, and a total amount of ₹75.5 crore was recovered by way of principal and interest. The operating profit of the corporation in 2016-17 was ₹34.2 crore. Currently there are 39 projects under various stages of implementation with a total investment of ₹4,464.7 crore, which would create employment for around 4,500 persons. The physical and financial performance of KSIDC in 2016-17 is given in **Appendix 3.1.14**. The Plan outlay for and expenditure by KSIDC in 2015-16, 2016-17 and 2017-18 are given in **Table 3.1.4**.

Completed Projects of KSIDC during the Twelfth Five-Year Plan

- First Phase of Light Engineering Industrial Park, Palakkad
- Manufacturing Industrial Zone at Angamaly

MAJOR INITIATIVES OF KSIDC

Ease of Doing Business

Ease of Doing Business (EoDB) is an initiative by the Department of Industrial Policy and Promotion, Government of India, for simplifying clearance procedures for starting an industrial

Table 3.1.4
Plan Outlay and Expenditure, KSIDC (₹ in crore)

Sl. No	Year	Outlay	Expenditure
1	2015-16	74.0	29.1
2	2016-17	87.5	50.2
3	2017-18*	96.7	119.1

Source:-Budget Estimate

**Expenditure as on October, 2017*

Box 3.1.4 **Ongoing Projects Initiated by KSIDC**

- Mega Food Park, Cherthala with major thrust on the processing and export of sea food items.
- Investment facilitation and industrial promotion activities.
- Entrepreneur support through mentoring.
- Angel/seed fund scheme.
- Electronic Hardware Park at Kochi – a world class manufacturing and R&D facility for the Electronic Sector.
- Life Science Park - for setting up a geographical cluster of industries and R&D institutions in key life sciences sector.
- Second phase of Light Engineering Industrial Park, Palakkad.
- Infrastructure development at Industrial Growth Centres.
- Business incubator for medical devices of Sree Chithira Thirunal Institute of Medical Science and Technology.

project. M/s KPMG was appointed as Consultant by KSIDC to undertake a study and submit a report on necessary reforms in the existing rules and acts relating to clearance procedures for starting an industrial unit in Kerala. The report has been submitted and based on the recommendation of the study report, amendment to seven Acts was approved by the Cabinet. The Governor of Kerala has approved and signed the “Kerala Investment Promotion and Facilitation Act 2017” amending 7 existing laws. Amendments to ten Rules have been cleared by the concerned departments and will be issued shortly.

Single Window Clearance System

The Government of Kerala has introduced the ‘Single Window Clearance System’ to ease the setting up of industrial projects in the State. KSIDC is the nodal agency for the scheme and National Informatics Centre (NIC) has been engaged for the development of online clearance mechanism and online Common Application Form. In the last financial year, KSIDC has cleared 8 major projects across various sectors.

Young Entrepreneurs Summit YES 3D

The third edition of Young entrepreneurs Summit was held at Kochi in September 2017. The summit was titled “YES 3D” and the theme was: Disrupt an existing process, Discover an alternate technology, and Develop better products/services. The aim of this flagship event is to foster the growth of entrepreneurship in young minds and to promote an enabling environment for entrepreneurship across all sectors.

Angel Fund/ Seed Fund

Kerala State Industrial Development Corporation has also initiated a special finance assistance scheme known as “Angel Fund/Seed Fund” to promote entrepreneurship among the youth of the State by making them job providers rather than job seekers. It aims to support scientific, technological and innovative projects promoted by young

entrepreneurs which are commercially viable. As on 31st March, 2017, KSIDC has sanctioned seed fund assistance to 58 innovative start-ups for an amount of ₹12.3 crore.

Industrial Growth Centers (IGC)

Kerala State Industrial Development Corporation has developed key infrastructure facilities in its Industrial Growth Centers (IGC) at Kannur, Kozhikode and Alappuzha districts. Number of jobs created in these IGCs as on October, 2017 are 1400, 640 and 650 respectively. Total number of operational units as on October, 2017 is 33, 28 and 18 respectively.

Land available with KSIDC

The total land available with Kerala State Industrial Development Corporation is 1,635 acres. Of this, land available for industrial development purposes was 1,078.7 acres. Out of the land available for industrial purposes (1078.7 acres), 364.5 acres have already been allotted to industrial units. The remaining land (714.3 acres) is still available with KSIDC for allotment to industrial units. Details of allotment of land in KSIDC Industrial Parks as on 31/07/2017 are shown in **Appendix 3.1.15**

KERALA INDUSTRIAL INFRASTRUCTURE DEVELOPMENT CORPORATION (KINFRA)

Kerala Industrial Infrastructure Development Corporation (KINFRA) was setup in 1993 aimed to accelerate industrial development in the State by providing infrastructure facilities to industries. KINFRA specifically aims at the economic development of the industrially backward regions of the State by setting up industrial parks/ townships/zone, which provide all the facilities required for the entrepreneurs to start an industry. The outlay for and expenditure by KINFRA in 2015-16, 2016-17 and 2017-18 are shown in **Table 3.1.5**.

Table 3.1.5
Plan Outlay and Expenditure, KINFRA (₹ in crore)

Sl. No	Year	Outlay	Expenditure
1	2015-16	55.1	44.8
2	2016-17	101.2	56.0
3	2017-18 *	111.3	13.5

Source:-Budget Estimate

*Expenditure as on October, 2017

The industrial parks developed by KINFRA have facilities such as developed land, built up space, dedicated power supply, continuous water supply and communication facilities, in addition to the supporting social infrastructure facilities such as administrative block, bank, post office and security. KINFRA industrial parks provide a ready-made manufacturing environment for easy starting up of industrial units with minimum time and cost. The details of allotments in KINFRA industrial parks as on 15, October 2017 are given in **Appendix 3.1.16**.

KINFRA has promoted investments in the State and created investment friendly climate within its Parks, contributing significantly to the State's economy. In this regard, 715 industrial units have been allotted land in the various industrial parks of KINFRA with a total investment of ₹1,669.6 crore, providing direct employment of 21,581 people. KINFRA has also implemented a single window clearance system in all the parks. The single window clearances system operating in the parks are helping investors to establish their units without hassles.

KINFRA has created world-class infrastructure in 22 industrial parks, of which 8 are catering exclusively to the small and medium enterprises. Some of the notable achievements are the successful completion of International Apparel Park at Trivandrum, Export Promotion Industrial Park at Ernakulam, Infotainment Park, Film and Video Park at Trivandrum, and Food Processing Industrial Park at Malappuram. KINFRA has developed small Industries Park at Trivandrum, Pathanamthitta, Ernakulam, Thrissur, Kannur, Wayanad and Kasaragod. In addition to this, the following three projects have been completed and allocation of built- up space is under progress.

- Industrial Park, Ottapalam: Construction of standard design factory completed and allocation of built-up space under progress. Internal roads and other common facilities have been completed.
- Construction of standard design factories (SDF): SDF completed in Kerala Small Industries Park Kunnamthanam, Koratty and Nellad. Foundation Stone laid for an additional SDF (Phase II) in KSIP Koratty.

Box 3.1.5
Ongoing Projects of KINFRA

- KINFRA integrated industrial and textile park, Palakaad
- Industrial water supply project, Palakkad
- Construction of Standard Design Factory, Ottappalam
- Industrial park, Ottappalam
- Water supply and road works for Infopark, Smart city and KEPIP
- Upgradation of existing industrial infrastructure, KSIP, Koratty
- Global Ayurveda Village, Thiruvananthapuram
- Industrial Park, Mattannur
- Green field electronic park, Ernakulam

- Industrial Park, Piravanthoor: Construction of Standard Design Factory completed and allocation of built up space under progress.

CENTRE FOR MANAGEMENT DEVELOPMENT (CMD)

The Centre for Management Development (CMD) is a leading, self-supporting autonomous institution, which provides research, consultancy and training support to development agencies, corporates and governments at the national, State and local levels. Established in 1979, it is sponsored by the Government of Kerala as an independent, professional, registered society. In 2016-17, the centre completed 26 research projects, while 18 research projects were under various stages of completion. In addition, the Centre also conducted 2 entrepreneurship development programmes, 15 management development programmes/workshops and 8 micro enterprise development programmes.

Major Issues/Challenges facing medium and large industries in Kerala

Inadequate industrial infrastructure, relative shortage of land for industrial development, difficulty in entry and exit due to procedural issues, mismatch between the relatively large supply of skilled workers and the slow growth of demand for their skills, technological backwardness and absence of innovation, poor marketing support infrastructure and absence of focus on local resource based enterprises are the major challenges facing medium and large industries in Kerala.

The vision of the State is to transform Kerala into an investor friendly destination through inclusive, eco-friendly and sustainable economic growth, with a focus on the creation of employment opportunities. Adoption of new technologies in various stages of production, design and marketing are needed to increase the productivity in this sector. Also effective product diversification methods in line with new trends will be key to success.

MICRO SMALL AND MEDIUM ENTERPRISES

The MSME sector has emerged as a vibrant and dynamic sector of the Indian economy. MSMEs play a crucial role in providing large employment opportunities given their comparatively low capital costs and their forward-backward linkages with other sectors. MSMEs are complementary to large industries as ancillary units, and this sector contributes significantly to the socio-economic development of the country. The sector consisting 36 million units, as of today, provides employment to over 80 million persons. MSME contributes 6 per cent to the country's GDP, 33.0 per cent to value added by the manufacturing sector and 45 per cent to the country's exports. *(Source: Annual Report 2016-17, Ministry of Micro, Small and Medium Enterprises, Government of India).*

MICRO SMALL AND MEDIUM ENTERPRISES (MSMEs) IN INDIA

The MSME sector in India is diverse in terms of size, levels of technology employed, and products. As per the estimates made using results of the Sixth Economic Census (EC), 2013, the Fourth All India Census of MSME, 2006-07 and Fifth EC, 2005, the number of MSMEs and employment in MSME sector are 5,12.99 lakh and 1,112.28 lakh respectively. *(Source: Annual Report 2016-17, Ministry of Micro, Small and Medium Enterprises, Government of India).*

STATE PROFILE OF THE MSME SECTOR

Kerala, with its excellent connectivity, communication network, availability of highly skilled human resources and relatively good industrial infrastructure, is highly suited for the growth of the MSME Sector. The MSME sector helps in industrialisation of rural and backward areas and provides employment to youth and socially disadvantaged groups such as SC, ST, women and physically challenged persons. The sector contributes to the socio-economic development of the State.

The Directorate of Industries and Commerce (DIC) acts as a facilitator for the growth of the MSME and traditional industrial sectors in Kerala. The agencies under the Directorate are: Directorate of Handloom and Textiles, Directorate of Coir Development and Khadi and Village Industries Board.

Udyog Aadhar Memorandum (UAM) in the State

Under the UAM scheme, which was notified in September 2015 under section 8 of the MSME Development Act 2006, MSME entrepreneurs need to file an online entrepreneurs' memorandum to instantly get a unique Udyog Aadhaar Number (UAN).

In Kerala, DIC discontinued the practice of filing EM Part II from September 18, 2015, and in its place, started online registration in Udyog Aadhar. As on March 31, 2017, the total number of Udyog Aadhar Memorandums filed was 34,518 under which the number of micro, small and medium units in the manufacturing sector were 21011, 3014 and 141 respectively (totalling 24166 numbers). In addition, there were 8341, 1952 and 59 micro, small and medium units in the service sector (amounting to a total of 10352 numbers). The details are given in **Appendix 3.1.17**. (Source: www.udyogaadhar.gov.in and DIC).

Performance of the Sector in Kerala

According to DIC, 15535 new MSME units were started in Kerala in 2016-17 with a total investment of ₹138,711.73 lakh, and generating employment for 57,445 persons. Ernakulam occupies the top position with 2267 new units and 8981 employees in the MSME sector. Wayanad was at the lowest position with 216 new MSME units, generating employment for 634 persons. The details are given in **Appendix 3.1.18**.

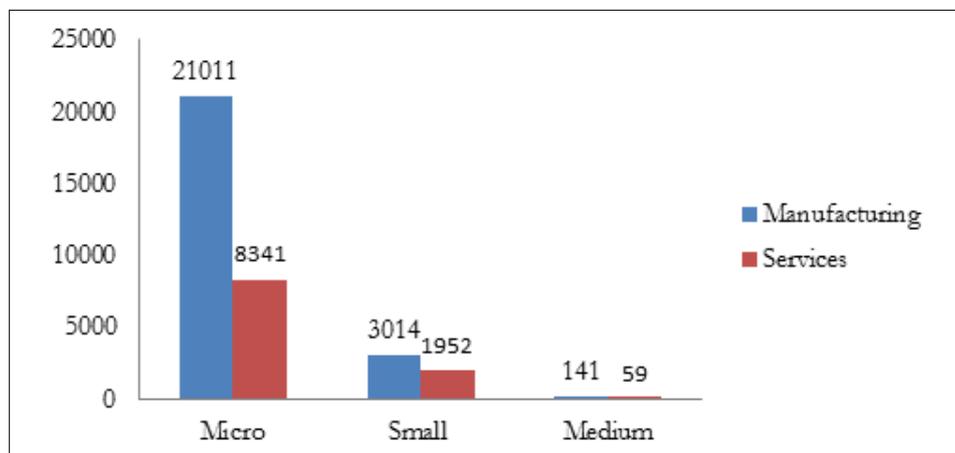
Financial Status

A total of ₹1,691.98 crore was provided for the development of the MSME sector in the 12th Five-Year Plan period and the expenditure incurred was ₹152.38 crore (90.02 per cent).

Box 3.1.6 Sixth Economic Census, 2013

According to the Sixth Economic Census, non-agricultural enterprises constitute 77.6 per cent of all establishments in the country. Non-agricultural enterprises, including both MSMEs and large establishments, employed a total of 108.4 million persons. They accounted for 82.6 per cent of the total employment in agricultural and non-agricultural establishments. The top 10 States (West Bengal, Uttar Pradesh, Maharashtra, Tamil Nadu, Andhra Pradesh, Kerala, Rajasthan, Gujarat, Karnataka and Madhya Pradesh) account for more than 70 per cent of the total number of establishments and employment in the MSME sector. Establishments in rural areas account for just over 50 per cent of total number of MSME establishments (Source: Annual Report 2016-17, Ministry of Micro, Small and Medium Enterprises, Government of India).

Figure 3.1.7
Number of Micro, Small and Medium Units Registered Under Manufacturing and Services Sector, 2016-17



Source: Budget Estimate

State Budget (2017-18)

The MSME sector of Kerala has consistently registered higher growth rate compared to other sub sectors in the industrial sector.

In the Budget 2017-18, an outlay of ₹404.46 crore was provided for Village and Small Enterprises and the expenditure up to August 30, 2017 was ₹132.84 crore (32.84 per cent).

In the Annual Budget 2017-18, an amount of ₹138.00 crore is provided under the MSME Sector. Due importance was given to gender budgeting. The strengthening of linkages between universities/research institutes and industry/enterprises is the new scheme taken up in the year 2017-18. The details are given in **Table 3.1.6**.

Major State Plan Schemes and Achievements

In 2016-17, State Government implemented various schemes successfully for improving the industrial environment of the State through development of industrial infrastructure, promotion of entrepreneurship and by providing skill development. Following are the major schemes and achievements.

Infrastructure Development Schemes

These schemes intend to promote development of infrastructure in the industrial parks, estates, development areas/plots (DA/DPs) including roads, power, water and facilities for waste management. There are also plans to develop new multi-storied industrial estates, industrial parks, and common facility centres for clusters. In 2016-17, construction works were started in the industrial estates at Veli, Shoranur, Punnappra, Puzhakkalpadam (II phase) with an estimated cost of ₹92.83 crore. Road construction work for the internal roads in 11 DA/DPs was completed at an estimated cost of ₹32 crore. This will benefit 1000 new enterprises. ₹4.05 crore has been provided for the II phase infrastructure development of 8.55 acre industrial estate at Varavoor in Thrissur District. An outlay of ₹25 crore was provided under the scheme for the year 2016-17.

Capacity building programme

The scheme intends to promote entrepreneurial/ industrial promotional activities and skill development training for MSME. Under the scheme following events were conducted:

- Entrepreneurial Development Programmes (EDPs) in 14 Districts, 616 entrepreneurs

Table 3.1.6
Outlay and Expenditure of Village and Small Enterprises During 12th Plan and Annual Plan 2017-18 (₹ in lakh)

Sl. No.	Sector/Sub sector	12th Five Year Plan (2012-17)		Annual Plan (2017-18)	
		Outlay	Expenditure	Outlay	Expenditure
	Village and Small Enterprises				
i	Small-scale Industries	39692.0	29688.9	12806.0	3985.6
ii	Commerce	1015.0	1002.3	400.0	272.3
iii	Handicrafts	2375.4	3950.2	595.0	206.8
	Sub Total (MSME)	43082.4	34641.4	13801.0	4464.6
iv	Handloom and Powerloom	34985.5	40440.6	7192.0	973.3
v	Coir industry	56294.9	44859.9	12812.0	1400.6
vi	Khadi and village Industries	6735.2	6236.2	1691.0	31.4
vii	Cashew Industry	28100.0	26149.9	4950.0	6415.0
	Total (Village and Small Enterprises)	169198.0	152328.1	40446.0	13284.9

Source : Budget 2017-18 and Planspace

- participated and started 118 new units.
- 100 Employee Assistance Programmes (EAPs) and 15460 participants attended.
- Started 196 Technology Clinics in 14 districts and 877 participants attended.
- Started 15535 new industrial units thereby by creating 57000 new jobs.

An outlay of ₹750 lakh was provided in 2016-17.

Entrepreneur Support Scheme (ESS)

The scheme intends to provide extensive support to MSMEs and give one time support to entrepreneurs, especially women and persons belonging to SC and ST community. In 2016-17 a total amount of ₹46.32 lakh was sanctioned to 1,101 enterprises. An outlay of ₹4,500 lakh was provided in 2016-17 under ESS.

Industrial Co-operative Societies

In Kerala, the total number of working industrial co-operative societies as on 31st March, 2017

was 430 as against 402 in the previous year (7 per cent increase). Out of 430 societies, 103 Societies were registered by women. The details are given in **Appendix 3.1.19**. Thirteen societies were registered in 2016-17.

Industrial Development Plot/ Areas

The Directorate of Industries and Commerce (DIC) develops infrastructure facilities for small scale industries in the State. At present, there are 37 development area/development plots under DIC, having a total acquired area of 2,443.57 acre. A total of 2,595 units are functioning in these DA/DPs in 2016-17 compared to 2,563 in the previous year. The details are given in **Appendix 3.1.20**.

Mini Industrial Estates

As on 31.3.2017, there were 89 mini industrial estates and 777 SSI units in these estates, providing total employment to 3,400 persons. The details are given in **Appendix 3.1.21**.

Industrial Estates under SIDCO

Kerala Small Industries Development Corporation (SIDCO) provides infrastructure facilities such as land, work shed, water, distribution of scarce raw material to the units in the small scale sector. There are 17 major industrial estates, which comprise 857 working units, under the administrative control of SIDCO. These working units provide employment to nearly 7,456 people (as on August 31, 2017). Besides, there are 36 mini industrial estates and 7 Industrial Parks (source: <http://www.keralasidco.com>) under SIDCO in which about 1,339 employees are working in 304 working units all over the State. The total turnover of SIDCO in 2016-17 was ₹312.34 crore. It is suffering losses from 2012-13 onwards. Details of industrial estates under SIDCO are given in **Appendices 3.1.22, 3.1.23 and 3.1.24.**

Promotional Events/Exhibitions – Achievements of the MSME sector in 2016-17

The Directorate of Industries and Commerce conducted/participated in 16 Exhibitions/Fairs/Expos inside Kerala with 904 stalls in 2016-17 and generated an income of ₹0.93 crore. Three exhibitions were held in Kasargod, two in Thrissur and one each in other 12 districts. The maximum number of stalls, 422, was put up in Kasargod district. DIC represented Kerala in one international exhibition outside Kerala with 136 stalls. Details are given in **Appendix 3.1.25.** Following are the major promotional activities undertaken by the Department of Industries in 2016-17.

- Organised Vyapar 2017 (Kerala Business to Business Meet) at Bolgatty Palace and Island Resort, Kochi from February 2 to 4, 2017 focusing on the Small and Micro Enterprises of Kerala.
- Participated in Aahar 2017, New Delhi (March 7 to 11, 2017) and Food Hospitality

World 2017, Bangalore (August 9 to 11, 2017).

- Organised the 5th Indo Ceylon Economic (ICE 5) Dialogue in Colombo, Sri Lanka on August 11, 2016 in association with the Federation of Indian Chambers of Commerce and Industry (FICCI) and Federation of Chambers of Commerce and Industry of Sri Lanka (FCCISL).
- Distributed MSME State/District level award 2013-14 on July 20, 2016 at Thiruvananthapuram.
- Conducted One Time Settlement for Margin Money Loan. 592 cases settled and ₹52,087,351 lakh have been collected.
- 280 Entrepreneurs Development Clubs (EDCs) conducted Entrepreneurs awareness campaigns. 7,000 students participated.
- Started 13 new Business Incubation Centres.
- Distributed Kerala Artisans award 2015-16 in 2016-17, and distributed ₹447,600 as pensioners benefits to old aged artisans.
- Programmes started for launching at least one cluster in each district.

Industrial Financing for the MSME Sector

State Level Bankers' Committee (SLBC)

As per the State Level Banker's Committee (SLBC) report, the outstanding bank credit by the commercial banks in Kerala to various sectors increased to ₹256,075 crore at the end of March 2017, against ₹232,417 crore in the previous year, an increase of 10.17 per cent. The outstanding flow of credit to the MSME sector in March 2017 was ₹39,408 crore, a decrease of 0.13 per cent, compared to ₹39,463 crore in March 2016. The status of flow of credit to various sectors is given in **Appendix 3.1.26.**

The Small Industries Development Bank of India (SIDBI)

The Government encourages SIDBI to refinance credit institutions, which provide unsecured loans, at reasonable interest rates, to borrowers based on their transaction history. The outstanding assistance to the MSME sector through various products was ₹4.51 crore as on March 31, 2017. Details are given in **Appendix 3.1.27**.

Kerala Financial Corporation (KFC)

KFC is another source for providing financial assistance to MSME and other sectors. The Kerala State Financial Corporation's (KFC's) main focus during the year was to accomplish maximum growth on the recovery front. Total recovery in 2016-17 was ₹874.28 crore compared to ₹758.26 crore in 2015-16. The Corporation sanctioned financial assistance of ₹385.31 crore in 2016-17 when compared to ₹1,025.99 crore in 2015-16. The operating profit of the Corporation stands at ₹7.87 crore and net profit at ₹5.69 crore. (Source: *Annual Report 2017, Kerala Financial Corporation*).

Industrial Cluster Development

Industrial clusters have an important role in the promotion of small and medium-sized enterprises mainly due to their inclusiveness, technology absorption, efficiency improvement and availability of common resources. The Ministry of Micro, Small and Medium Enterprises (MSMEs) adopted the cluster approach as a key strategy for enhancing the productivity and competitiveness as well as capacity building of small enterprises.

The State has already adopted the cluster development approach for industrialisation to reap the benefits of agglomerations through transformation of the traditional systems of activities or industrial districts to new networks ready for competition and innovation. The State

supports cluster development through MSME-DI, Government of India, Thrissur and Kerala Bureau of Industrial Promotion (K-Bip). The Common Facility Centres (CFC) which are in various stages of development in the State are in the areas of wood, plywood, furniture, rubber, textile, rice mill, plastic, printers, ethnic food, agriculture implements and general engineering. Ministry of MSME under the Scheme is assisting 19 Cluster CFC in Kerala. MSME-DI, Thrissur is actively engaged in the promotion and development of clusters in the State in close liaison with the State Government and other stakeholders. In principle approval was given for Plywood Cluster, Muvatuupuzha. A new cluster consortium was formed by All Kerala Steel Furniture Manufacturers Association, Okkal, Kalady, Ernakulam under MSE-CDP Scheme. (Source: *Annual Report 2016-17, MSME Development Institute, Thissur*).

Promoting Entrepreneurship and Skill Development

Promotion of local entrepreneurship can help improve and create more sustainable consumption and production systems. Entrepreneurial education fosters innovation and helps entrepreneurs build better products, processes, and services. It is especially effective when it takes into account the social, economic and ecological complexities of development, the values of sustainability, and a long-term perspective. The details of skill development and training institutes are given in **Table 3.1.7**.

Staff training and the vocational and continuous on-the-job training ensures a constant upgrading of workers' skills. In India, the Ministry of Micro, Small and Medium Enterprises provided entrepreneurship and skill development training to 1.69 million persons during the 11th Plan and 1.16 million persons during the first two years of the 12th Plan through various institutions such as MSME-Development Institutes, KVIC, Coir Board, and National Small Industries Corporation

Table 3.1.7
Skill Development and Training Institutes in Kerala

MSME Development Institute, (MSME-DI), Thrissur, Government of India	The institute under the Ministry of MSME, Government of India provides techno-economic and managerial consultancy services to the MSME sector in Kerala and the Union Territory of Lakshadweep. It also conducts various training programmes viz. Industrial Motivation Campaigns, Entrepreneurship Development Programme (EDPs), Entrepreneurship Skill Development Programme (ESDP), Management Development Programmes (MDPs) and Skill Development Programmes under PD Account (SDPs). During 2017-18 (up to 31.8.2017), 2 courses were undertaken and 51 persons were trained under ESD Programme.
Kerala Academy of Skill excellence (KASE)	Government of Kerala has setup three Kaushal Kendras under KASE at Kollam, Kozhikode and Palakkad to provide career guidance and industrial training to young workers, improving their employability. As on 31.8.2017, 359 persons were trained in 245 various training programmes.
Kerala Institute of Labour and Employment (KILE)	Constituted by Government of Kerala, KILE is an institute for training and research in labour and allied subjects. During 2016-17 various programmes were conducted by KILE including Training, Workshops, Seminars, Publications and Research studies. The beneficiaries through these programmes were 2251. During 2017-18, 13 programmes were conducted (as on 31.8.2017) and the beneficiaries are 766, which is 34.02 per cent higher than the previous year.

Source: Directorate of Industries and Commerce

(NSIC). MSME-Development Institute (MSME-DI), Thrissur, Government of India has conducted 49 courses in 2016-17, benefitting 9,548 potential entrepreneurs. In 2017-18 (up to 31.8.2017), 14 courses were undertaken and 1,582 persons benefitted from the skill development programmes. Details are given in **Appendix 3.1.28**.

Financial Package for rural industries- Prime Minister's Employment Generation Programme (PMEGP)

'Prime Minister's Employment Generation Programme (PMEGP)' is a credit linked subsidy scheme at the national level, which aims to generate

employment opportunities by setting up of micro-enterprises in the non-farm sector in rural as well as urban areas. In 2016-17, the banks sanctioned 783 applications and provided margin money of ₹991.88 lakh. The comparable figures for 2015-16 were 26 applications and ₹109.62 lakh respectively. Details are given in **Appendix 3.1.29**.

New Initiatives

Vyavasayajalakam – Kerala MSME Geo Portal

The geo-portal for MSME ventures, "VyavasayaJalakam" is designed to gather data about industrial ventures in the State and about

the problems that they face. Officials from the Department will directly gather data from the ventures and generate a GPS-enabled industrial map of the State. Information has been gathered from 34,420 units till now.

Kerala State Wide Area Network (KSWAN) integration scheme

The KSWAN integration scheme has been designed to enhance basic IT amenities in all the District Industries Centres in the State. With the implementation of the project, each official handling a file at the district office would have KSWAN facility, telephone connectivity and UPS power backup.

Launching of New Website

The directorate website (www.industry.kerala.gov.in) has been redesigned to include details about the single window system of the department, business incubation centres, training programmes, and MSME awards. Details regarding the handicraft industry, links to the micro-websites of all 14 district industries centres and details about the department's online scheme would be available in the new website

The Land Management System

The Land Management System has been put in place to enable submission of online applications for allotment of land or industries from 2,500-plus acres of land with the department. In the first phase applications for land would be accepted only online.

IT-enabled support facilities

Steps are being taken to implement the e-office in the Directorate of Industries and Commerce. The aim is to eliminate paper files. The filing and subsequent actions of applications under entrepreneurial aid scheme were done through online process.

FOOD PROCESSING SECTOR

Food processing sector is an important industry in India in terms of output and employment. India's food processing sector covers fruit and vegetables, spices, meat and poultry, milk and milk products, alcoholic beverages, fisheries, plantation, grain processing and other products. India ranks fifth in terms of production, consumption and exports of food and related products. (Source: www.ibef.org).

A well-developed food processing sector helps to reduce wastage and improves value addition of food and agro products, promotes crop diversification, ensures better return to farmers, promotes employment, and increases export earnings. (Source: *Annual Report 2016-17, Ministry of Food Processing Industries, Government of India*).

State-wise Distribution of Registered Factories in Food Processing Sector

As per the latest Annual Survey of Industries 2013-14, the total number of factories in the registered food processing sector in the country was 37,445. Highest number of registered factories is located in Andhra Pradesh, which accounts for about 15.33 per cent of the total registered factories in food processing sector industries followed by Tamil Nadu (13.90 per cent), Telangana (10.28 per cent), Maharashtra (8.12 per cent) and Punjab (7.44 per cent). Kerala has 1,460 units and occupies 3.9 per cent of the total number of factories in Food Processing Sector in India. (Source: Annual Report 2016-17, Ministry of Food Processing Industries, Government of India).

KINFRA Food Processing Park, Kakkancherry, Malappuram

The KINFRA Food Processing Park at Kakkancherry, Malappuram district, set up in an area of 23.5 acres has 28 working units. In 2016-17, the park has invested ₹8,570.4 lakh and created 815 jobs.

KINFRA Small Industries Park, Mazhuvannur, Ernakulam

The park, set up in an area of 67 acres of land under the Integrated Infrastructure Development Scheme of the Centre, promotes small industrial as well as food processing units. The park offers

infrastructure facilities such as water, power and developed land. It has a cold storage which has a capacity of 50 tonnes, and can be expanded to 250 tonnes.

KINFRA Mega Food Park, Palakkad

KINFRA Mega Food Park, Palakkad is being implemented in accordance with the Mega Food Park Scheme (MFPS) of Ministry of Food Processing Industries (MOFPI), Government of India. The project involves the setting up of a Centralized Processing Center (CPC) in an area of about 79.42 acres at Elapully and Pudussery villages near Walayar in Palakkad and four Primary Processing Centers (PPCs) in Ernakulam, Thrissur, Malappuram and Wayanad. Details of KINFRA food processing units in parks are given in **Appendix 3.1.30**.

Implementation of Food safety system through NCHC

National Centre for HACCP Certification (NCHC) associated with K-BIP is in the process of auditing, certification and recertification of various food processing and allied units in Kerala and outside the State. To provide awareness on Food Safety to the MSMEs in the Food Processing and Allied Sectors of the State, National Centre for HACCP Certification (NCHC) in association with Kerala Commissionerate of Food Safety organised an 'Awareness Workshop on Food Safety' in Kochi on April 29, 2016.

TRADITIONAL INDUSTRIES

HANDICRAFT INDUSTRY IN KERALA

Handicraft industry is one of the traditional industries of Kerala. Kerala has the tradition of making beautiful handicrafts with ivory, bamboo,

palm leaves, seashells, wood, coconut shells, clay, cloth, coir, metals, stone, lacquer ware, and so on. Many old handicraft classics can be seen in palaces, old heritage homes and museums in the State. A vast majority of the traditional artisans belong to socially and economically backward classes.

Importance of Handicraft Industry

Kerala State Handicrafts Apex Co-operative Society (SURABHI), Handicrafts Development Corporation, and Artisans Development Corporation are the major agencies for the promotion of the handicraft industry in Kerala.

Kerala State Handicrafts Apex Co-operative Society (SURABHI)

SURABHI is the apex organization of primary handicrafts co-operatives established with a view to uplift the artisans by marketing their products and implementing welfare schemes with the assistance from State and Central Governments. There are 46 Co-operative societies under SURABHI. The turnover of the society in 2016-17 was ₹280.83 lakh. The Apex society received an amount of ₹255.50 lakh in 2016-17 as assistance from the State Government. This was primarily used for conducting exhibitions and repair works of showrooms. SURABHI made a profit of ₹1.25 lakh from 11 exhibitions and fairs in the year 2016-17. The total employment provided during the period was 30,000. Details are given in **Appendix 3.1.31**.

Handicrafts Development Corporation of Kerala (HDCK)

Handicrafts Development Corporation of Kerala (HDCK) is engaged in procuring and marketing handicraft products, and thereby ensuring fair returns to artisans. The show rooms of HDCK include Sree Moolam Shashtyabdapurthi Memorial Institute (SMSMI) in Thiruvananthapuram and Kairali emporia spread all over India. At present it is having a network of 19 such sales emporia other than SMSMI. Moreover with the support of Government of India, HDCK has been implementing welfare schemes for artisans and also conducting of exhibitions/craft bazars at important places and tourist centres.

HDCK has been running a Common Facility Service Centre (CFSC) at Thiruvananthapuram for artisans who engage in development of wood crafts. Establishment of Common Facility Service Centres and Assistance to Apex Organisation in the Handicrafts Sector are the Plan schemes implemented through HDCK in 2017-18. Total turnover of the Corporation in 2016-17 was ₹1,229.35 lakh. Details are given in **Appendix 3.1.32**.

Box 3.1.7

13th Five-Year Plan – Approach for Traditional Industries

- Recommended a two-pronged intervention
 - i) Modernisation of industries and diversification of output.
 - ii) For those who remain in traditional forms of production, the Government will ensure decent levels of wages, employment, and incomes.
- Modernisation of traditional industries includes the mechanisation of production processes.
- Diversifying into new products, and evolving effective marketing and distribution strategies.
- Rather than displacing workers modernisation leading to overall expansion of the industry and the creation of greater value addition per worker.
- Diversifying into new products such as coir geo-textiles, and evolving effective marketing and distribution strategies.

The Kerala Artisans Development Corporation (KADCO)

The Kerala Artisans Development Corporation (KADCO) is one among the State agencies providing assistance to artisans for establishing production units, promoting marketing of products and providing employment opportunities through trade fairs and marketing centres.

BAMBOO INDUSTRY

Bamboo is a highly productive renewable and eco-friendly resource and has several applications. It is widely used in environment protection, as a nutrient food, high-value construction material and in about 1,500 other applications. It is estimated that about 2.5 billion people use bamboo in one form or the other at the global level. Advanced research activities are conducted to utilize bamboo for efficient fuel generating system.

In Kerala, 28 species of bamboo are found. Bamboo from the Kerala forest are being supplied mainly to the pulp and rayon units under concessional rates. It is estimated that there are about one lakh people in the State dependent on bamboo for their livelihood. A unique feature of Kerala is that 67.3 per cent of the extracted bamboo comes from home gardens rather than from the forests. (Source: <http://www.keralabamboomission.org>).

Kerala State Bamboo Mission

Kerala State Bamboo Mission (KSBM) was constituted in the year 2003 to act as the Bamboo Development Agency (BDA) of the State. The interventions initiated after the formation of KSBM under K-BIP includes promoting cultivation of bamboo, creation of new designs for innovative products in the handicrafts sector along with appropriate skill development, and the promotion of bamboo based modern industries supported by technology adaptation and development.

The major activities of KSBM in 2016-17 were:

- i. Setting up of Bamboo Innovation Centre at Angamaly, Ernakulam in August 2016. It acts as the Resource Centre for the development of bamboo sector in the State.
- ii. Kerala Bamboo Fest was held in December 2016 in Ernakulam as part of the exercise of marketing of Bamboo products made in the State.
- iii. Organising various Skill Development/ Training Programmes for Bamboo Artisans.
- iv. Supplying Tools/Equipment to groups as Common facilities to make standardized products.
- v. Aiding the development of bamboo supply chain to ensure the availability of raw/ treated bamboo to the artisans/craftsman in various location of the State.

The Kerala State Bamboo Corporation

The Kerala State Bamboo Corporation was incorporated in 1971 as a Government of Kerala undertaking to promote the welfare of the traditional bamboo workers in the State. The main objective of the Corporation is to develop and promote industries based on bamboo, reed, cane and rattan, and to undertake manufacture and trading of the above products, provide financial, technical and other assistance and guidance to the traditional bamboo workers. The Corporation is serving about 10,000 bamboo workers families of Kerala with a low capital base of ₹900 lakh. Majority of the workers are living Below the Poverty Line (BPL) and belong to socially and economically backward, SC/ST Communities.

The main activities of the Corporation are to generate employment and means of livelihood to the traditional bamboo workers attached to the Corporation. The Corporation collects good quality reeds from the Government Forest land and distributes the reeds to the traditional bamboo weavers of the Corporation on a subsidized rate on credit basis. It then procure the woven mats from the weavers. The main products of the

Corporation are Bamboo Mats, Bamboo Ply, Flattened Bamboo Boards, Bamboo Flooring Tile, Bamboo Furniture etc.

Problems and Issues in the sector

- Cutting and Transit Act and Rules of Forest
- Lack of proper supply chain (for bamboo)
- Lack of working capital for the artisans/NGOs
- Limited credit flow to MSME/and lack of skilled man power
- Lack of effective/efficient entrepreneurship development programmes/skill development programmes.
- Lack of awareness about technology to be implemented in the process
- Lack of awareness in developing tools according to design changes and development
- Lack of modernization and new designs/innovations
- Standardisation and packaging technology
- Inadequate marketing facilities/handholding support for forward and backward linkages

The government, whose role has changed to a facilitator rather than a provider, should intensify its interventions in creating adequate infrastructure, creating appropriate climate to attract private investment, technical upgradation, diversification and modernisation etc. for the revival and strengthening of the sector.

TEXTILE INDUSTRY

The Indian textile industry plays a significant role in the economic growth of the country through its contribution to industrial output, employment generation, and export earnings. The growth and all-round development of this industry has a direct bearing on the improvement of the economy.

Handloom, Powerloom and Mill Sectors

In India, handloom weaving is one of the largest economic activities after agriculture, providing direct and indirect employment to more than 43 lakh weavers and allied workers. This sector contributes nearly 15 per cent of the cloth production in the country and also contributes to the export earnings of the country. In fact, 95 per cent of the world's hand woven fabric is produced in India. The textile industry contributes to 10 per cent of manufacturing production, 2 per cent of India's GDP and 13 per cent of the country's export earnings. (Source : Annual report 2016-17, Ministry of Textiles)

The powerloom sector is one of the most important segments of the textile industry in terms of fabric production and employment generation. It provides employment to 64.36 lakh persons and contributes 60 per cent of total cloth production in the country.

The organised textile sector has more than 3400 textile mills both in the small scale industry and non-small scale industry sectors. The mill sector produces nearly 2,500 million square million kgs of man-made fibre and man-made yarn. The share of Kerala in the national handloom industry remains relatively small. (Source : Annual report 2016-17, Ministry of Textiles).

Among traditional industries of Kerala, handloom sector stands second only to the coir sector in providing employment. Kerala's textile industry comprises traditional handloom sector, power loom and the spinning sector. The handloom industry in the State is mainly concentrated in Thiruvananthapuram and Kannur District and in some parts of Kozhikode, Palakkad, Thrissur, Ernakulam, Kollam and Kasaragod Districts. The industry is dominated by the co-operative sector, covering 96 per cent of total looms. The remaining 4 per cent of handloom units are owned by industrial entrepreneurs.

The major varieties of products produced in the handloom sector of the State are dhothis, furnishing material, bed sheets, shirting, saree and lungi. Considering the traditional value and heritage, the following products of the State are registered under the Geo Indication Act of India.

1. Balaramapuram Sarees and Fine cotton Fabrics
2. Kasargod Sarees
3. Kuthampully Sarees
4. Chendamangalam Dhothi
5. Cannanore Home Furnishings

Directorate of Handlooms and Textiles and Agencies in Handloom Sector

The Directorate of Handlooms and Textiles, Kerala, which is functioning under the Department of Industries and Commerce, aims at evolving policies for the promotion and development of handloom and textile sector in the State. The Director heads the office and also acts as the functional registrar of Apex Co-operative Weavers' Society and Co-operative Spinning Mills in the State.

Kerala State Handloom Weaver's Co-operative Society (Hantex)

Kerala State Handloom Weaver's Co-operative Society (Hantex) was registered in 1961 under the Kerala Co-operative Society Act of 1961. Hantex is the apex body of handloom co-operatives established for distribution of required inputs to primary co-operative societies. It is involved in procurement, processing, marketing of goods, processing of high quality yarn and raw materials for societies, exploring new business opportunities, and promoting handloom products through exports. Currently, Hantex comprises 518 primary co-operative societies as members. Out of this, 350 are engaged in production and procurement processes with most modern infrastructure to produce hand crafted fabrics, garments, furnishings, made-ups, sarees and traditional wears in tune and harmony with eco friendly norms for internal and export market. Currently, there are 92

sales outlets in Kerala. The accumulated loss of Hantex decreased from ₹1,998.48 lakh in 2015-16 to ₹1,837.87 lakh in 2016-17. Details of Hantex are given in **Appendix 3.1.33**.

Co-operative Sector

The co-operative sector consists of factory type and cottage type societies. The number of registered Primary Handloom Weavers Co-operative Societies in the State as on September, 2017 is 625 as against 600 in March 2016. Of this, 185 are factory type and 440 are Cottage type societies. Of these 625 societies, 409 are in working condition as on September 2017. The number of factory type co-operative societies functioning at present is 99 (24.2 per cent) and cottage type societies is 310 (75.8 per cent). Details are given in **Appendix 3.1.34**.

Kerala State Handloom Development Corporation (Hanveev)

Hanveev, which started functioning in 1968, is another agency for the upliftment of traditional handloom weavers in the unorganized sector. Its registered office is at Kannur. It is engaged in the manufacturing and marketing of wide range of handloom products. At present, Corporation has 49 own showrooms, 7 exclusive agency showrooms and 32 production centres. Details of Hanveev are given in **Appendices 3.1.35 and 3.1.36**. In 2016-17 (provisional), Hanveev's sales turnover was ₹1,558.87 lakh, but it incurred an accumulated loss of ₹8,277.16 lakh.

Indian Institute of Handloom Technology (IIHT)

IIHT, Government of Kerala, is the nodal agency in the State for providing technological inputs to the handloom sector. The Institute was established and registered under the Societies Registration Act of 1860 in the year 1987 in the name of Institute of Handloom and Textile Technology (IIHT).

Now the Institute of Handloom and Textile Technology, is amalgamated to the Indian Institute of Handloom Technology, which is working on the guidelines of the Ministry of Textiles and Government of India.

Performance of the Handloom sector

The total Plan outlay and expenditure for the handloom sector during the 12th Five-Year Plan period (2012-17) was ₹349.9 crore and ₹404.4 crore (115.6 per cent) respectively. The total outlay provided in the Annual Plan 2017-18 for the sector is ₹71.9 crore and the expenditure up to October 2017 was ₹9.6 crore (13.3 per cent). Outlay and expenditure for major schemes in 12th Five-Year Plan (2012-17) and Annual Plan 2017-18 are given in **Table 3.1.8**.

Physical Analysis of Major Schemes in the Handloom Sector, 2016-17

1. Modernisation of handloom co-operative societies and promotion of value added products

Assistance is given for producing innovative, value added products, modernization of pre

loom and post loom facilities to develop brand equity, improving marketing skills of persons working in show rooms and renovation of show rooms. In 2016-17, assistance was given for workshed assistance to 4 Primary Handloom Workers Co-operative Society (PHWCS), 73 weavers, assistance to dye house modernisation to 2 PHWCS, revitalisation assistance to 6 PHWCS, product development assistance to 57 PHWCS, assistance for loom accessories to 18 PHWCS and technology upgradation assistance to 4 PHWCS through the scheme.

2. Skill upgradation training for handloom weavers

The objective of this scheme is to develop inherent artistic skills of the traditional weavers to develop unique designs and value added and diversified products. Skill development training given to 120 weavers in 2016-17.

3. Capital Support schemes

Under this scheme, in 2016-17, various programmes for infrastructure development were directed to PHWCS and apex societies. The objectives included technology upgradation, revitalisation and development of favourable working condition in the units. In 2016-17 assistance was given to 13 PHWCS, Hantex and Hanveev.

Table 3.1.8.
Plan Outlay and Expenditure of the Handloom Sector in the 12th Five-Year Plan Period, ₹ in crore

Sl. No	Schemes	12 th Five-Year Plan			Annual Plan 2017-18		
		Plan Outlay	Plan Expenditure	per cent	Plan Outlay	Plan Expenditure	per cent
1	Modernisation of Handloom co-operative societies and promotion of value added products	49.0	33.0	67.3	10.0	0.22	2.2
2	Training and skill development programme	13.5	12.8	95.0	2.3	0.34	15.0
3	Capital support schemes	50.2	48.6	96.8	9.1	4.5	49.0
4	Incentive and welfare Schemes	49.3	39.8	81.0	1.1	0.32	29.0
5	Marketing and trade promotion scheme	14.9	12.5	84.0	4.0	0.59	15.0

Source : Budget 2012-13 to 2016-17, State Planning Board and Planspace

4. Incentive Schemes

Large number of weavers benefitted through different incentive schemes such as weavers/allied workers motivation programme, Income support scheme, Contributory Thrift Fund Scheme, and Group insurance scheme. In 2016-17, there were 4890 weavers benefitted under Contributory Thrift Fund Scheme and 8350 weavers were covered under group insurance scheme.

5. Marketing and Trade promotion schemes

As a part of marketing and trade promotion, assistance was given for renovation of showrooms and for conducting handloom expos.

Overall performance of Handloom Industry in Kerala

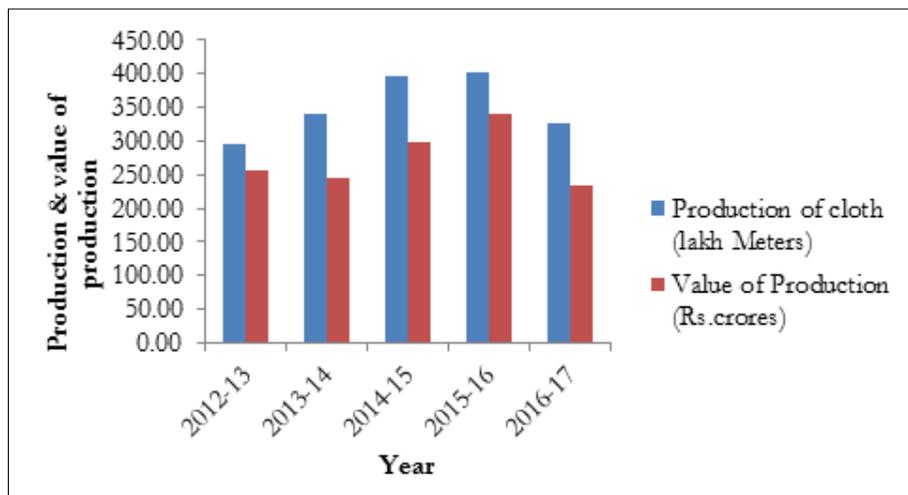
Government assistance extended for the development of handloom industry was ₹74.31 lakh as loan and ₹565.00 lakh as grant in 2016-17. The details are shown in **Appendix 3.1.37**. The total value of production in the handloom sector showed a decrease of 31 per cent from ₹339.25 crore in 2015-16 to ₹233.58

crore in 2016-17. The total number of weavers employed declined by 4 per cent, from 20,135 in 2015-16 to 19321 in 2016-17. The number of women employed decreased from 15,093 in 2015-16 to 13,780 in 2016-17. The total employment generated in the sector also decreased from 67.37 lakh man days in 2015-16 to 65.34 lakh man days in 2016-17. Total turnover for the handloom industry in 2016-17 was ₹78.94 crore, which includes money, man, and material costs. The average wage rate prevailing in the industry ranges between ₹150 to ₹200 per day, which is very meagre. Details regarding production in handloom industry in Kerala are given in **Appendix 3.1.38** and in **Figure 3.1.8** and **Figure 3.1.9** shows employment generated (lakh man days) in the handloom sector.

There was a steady increase in production and value of production in the handloom sector from 2012-13 to 2015-16, and a decline in 2016-17. The employment generated in this sector was relatively high in 2012-13 and 2013-14, but declined considerably in the next three years.

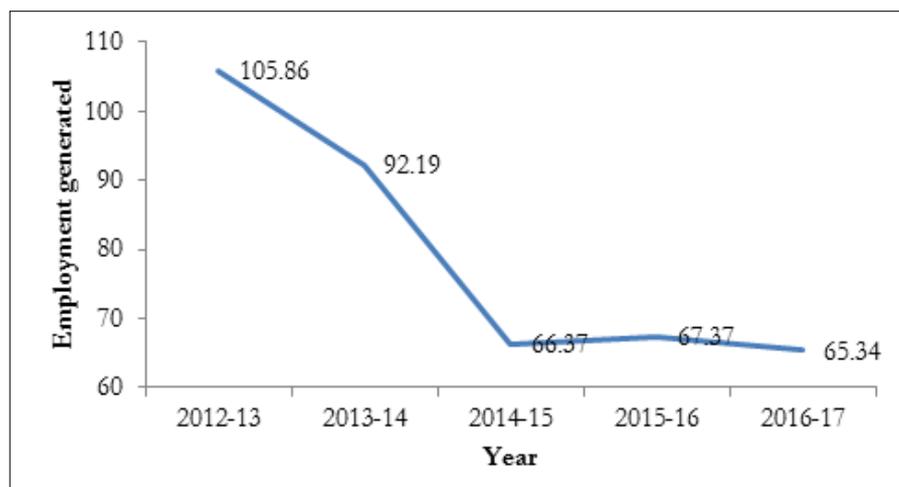
The challenges faced by the handloom sector include the shortage of workers mainly due to low wages in this sector, low productivity, lack of technological interventions, competition from power looms and competition from textile units

Figure 3.1.8
Production and Value of Production in the Handloom Sector



Source : Directorate of Handloom and Textiles, GOK.

Figure 3.1.9
Employment Generated in the Handloom Sector



Source : Directorate of Handloom and Textiles, GOK.

Box 3.1.8
Major Achievements of Handloom Sector During the 12th Five-Year Plan

- Introduced the Scheme 'Free Handloom School Uniform' for 2.25 lakh students in Government schools in Kerala from classes 1 to 5.
- Contributory Thrift Fund- Weavers of almost all districts benefitted from this scheme. A large number of weavers and their family members received financial assistance for medical treatment, educational purposes and marriage expenses.
- Health Insurance Scheme- 11540 weavers benefitted from this scheme. This scheme provided free medical treatment facilities to insured workers.
- Assistance given for improving pre loom and post loom facilities in PHWCS and member societies under Apex society.
- Painting competitions, seminars and quiz competition are conducted in schools and colleges to encourage the use of handloom cloth.
- Margin money assistance given to potential entrepreneurs in this sector.

from other states. Other issues include the lack of product diversification in accordance with new trends, shortage of working capital and fluctuations in prices of hank yarn and cotton. The strengths of the handloom sector are in its ability to produce intricate woven fabric, its versatility and wide variety, diverse design base and ability to switch to new designs. Workers in the handloom sector have specific skills. The sector makes use of eco-friendly technologies and processes.

Textile Sector – Spinning and Weaving Mills

The textile industry in Kerala is organized into public sector units, co-operatives, and units that are jointly owned by public and co-operative sectors. There are 17 spinning mills functioning in the public/co-operative sector under the State Government.

Kerala State Textile Corporation Limited (KSTC)

KSTC, a Government of Kerala undertaking, was incorporated in 1972 with the main objective of setting up and running textile mills in the State. The Corporation has four mills and one research and testing centre. Mills under KSTC are, Prabhuram mills, Kottayam Textiles, Edarikkode Textiles, and Malabar Spinning and Weaving Mills. Two other units, Sitaram Textiles and Trivandrum Spinning Mills Limited are now under the administrative control of KSTC. In addition to the above, Corporation has under its fold a research and testing division (CARDT- Centre for Applied Research and Development in Textiles), located at Balaramapuram (Thiruvananthapuram).

Kerala State Co-operative Textile Federation Limited (TEXFED)

TEXFED was established in 1992 as a body to plan, assist and supervise the setting up and management of co-operative textile units in Kerala. TEXFED is the apex body of Co-operative Spinning Mills and Integrated Power loom Co-operative Societies in the State. It integrates all the segments of the textile industry including spinning, weaving, processing and garmenting. There are seven co-operative spinning mills as members of TEXFED. Five of them are administered by the State government and two by elected boards.

Mills involved in spinning and weaving in Kerala have been facing problems of both demand and supply. Out-dated machinery, stiff competition, high cost of raw material, low productivity, decreasing profits and lack of working capital are also issues of concern for the textile sector in Kerala. A majority of textile spinning mills in the State are over 25 years old and they use obsolete technologies and equipment. Partial modernization was attempted in certain units, but it was not at par with the industry standards.

Modernisation of Co-operative Spinning Mills

The State Government has taken steps to revive the co-operative spinning mills in Kerala. Assistance was provided for upgrading existing machinery and improving technology in the following units: K. Karunakaran Memorial Spinning Mill at Mala, Priyadarsini Co-operative Spinning Mill (Prico Mills), and Malabar Co-operative Spinning Mills.

During the 12th Five-Year Plan, an amount of ₹93.4 crore was provided for spinning mills in the co-operative sector, and expenditure incurred was ₹179.2 crore. The outlay provided for spinning mills under co-operative sector in Annual Plan 2017-18 is ₹27.00 crore. These spinning mills are currently facing a crisis due to high cotton prices and low realisation from the sale of yarn, leading to huge loss. This erodes the available working capital support given by Government in every year leading to reduction of capacity utilization for want of raw material. Hence concrete measures are required to strengthen these mills to overcome the crisis.

Powerloom Industry

The weaving sector is relatively less developed in Kerala, especially given the production capacity of the yarn sector in the State. To promote the weaving sector, government provided budgetary support to set up four integrated power loom co-operative societies in the State. Currently there are 32 power loom co-operative societies in the State. The co-operative sector owns 545 looms out of a total of 637 power looms in the State. Total value of production in the powerloom industry in 2016-17 was ₹19.0 crore and productivity was 7,022.0 metre/loom. Total turn over in the period was ₹827.3 crore. The year-wise details of production and productivity under power loom industry for the period from 2012-13 to 2016-17 are given in **Appendix 3.1.39**. Outlay and expenditure for major schemes in power loom sector during the 12th Five-Year Plan and Annual Plan 2017-18 is shown in **Table 3.1.9**.

Table 3.1.9
Outlay and Expenditure for Major Schemes in Powerloom Sector

Sl. No	Schemes	12th Five-Year Plan			Annual Plan 2017-18		
		Plan Outlay	Plan Expenditure	per cent	Plan Outlay	Plan Expenditure	per cent
1	Development of Powerloom Industry	4.3	3.0	69.4	1.4	.0002	0.01
2	Modernisation of Powerlooms	201.4	16.8	82.4	3.5	.06	1.7

Source : Budget 2012-13 to 2016-17, State Planning Board and Planspace

Problems related to marketing and lack of finance, raw material, technological upgradation, fabric processing facilities, awareness among the weavers about the facilities are some of the problems faced by the powerloom industry.

Conclusion

Several measures are needed to modernize the textile sector. Technology needs to be upgraded to ensure improvements in product quality and productivity. The sector should make use of the possibilities of information technology to improve the production and marketing of value added products in national and international markets. To improve the productivity of weavers, productivity linked incentives may be provided. With modernisation/mechanisation and value addition, wages in the sector may improve, which will prevent the exit of workers from this sector. As part of the handloom innovation programme, production of organic cloth with 'Made in Kerala' branding can be promoted. Showcasing the rich traditions of the handloom sector will promote other sectors like tourism also.

KHADI AND VILLAGE INDUSTRIES

Khadi and Village Industries Sector in India

Khadi and village industries have the potential to create employment for rural artisans with a very low capital investment. Khadi and Village

Industries Commission (KVIC), Government of India is a statutory organization tasked with the role of promoting the production and sale of Khadi. At the national level, over 12 lakh people are engaged in production activities under KVIC, a majority of which (over 70 per cent) are women. Khadi production and sales have grown consistently over the past five years in India, from production of ₹811.0 crore in 2013-14 to ₹1,066.0 crore in 2015-16. Similarly, sales of Khadi have shown growth from ₹1,081.0 crore in 2013-14 to ₹1,510.0 crore in 2015-16. Total employment provided by Khadi industries in India was 11.1 lakh as of 2015-16. In 2016-17, Khadi and Village Industries (KVIC) have provided cumulative employment to 130.7 lakh persons and produced goods worth ₹34,211.6 crore at the national level (*Source: Annual Report 2016-17, Ministry of Micro, Small and Medium Enterprises, Government of India*).

Kerala's share in production, sales and employment in India has been smaller than Kerala's share in India's population (**Table 3.1.10**).

Kerala Khadi and Village Industries Board

The Khadi and Village Industries Board is a statutory body vested with the responsibility of organizing, developing and promoting khadi and village industries in Kerala. In 2016-17, fully owned units of Khadi and Village Industry Board in Kerala produced goods valued at ₹171.7 crore.

Total employment in Khadi and Village Industries in Kerala declined from 1.3 lakh in 2011-12 to

Table 3.1.10
Production, Sales and Employment Generation in Khadi and Village Industries Sector

Year	Production (₹crore)		State's Share	Sales (₹crore)		State's Share	Cumulative Employment(in lakh mandays)		State's Share
	National	Kerala	Per cent	National	Kerala	Per cent	National	Kerala	Per cent
1	2	3	4	5	6	7	8	9	10
2011-12	21852.0	144.7	0.7	26797.1	167.5	0.6	119.1	1.3	1.1
2012-13	24024.2	145.8	0.6	27839.7	170.8	0.6	124.8	1.2	1.0
2013-14	26109.1	139.8	0.5	31152.4	172.6	0.6	140.4	1.2	0.8
2014-15	27569.4	136.4	0.5	33135.9	170.0	0.5	134.3	1.1	0.8
2015-16	34490.2	160.4	0.5	41894.6	161.3	0.4	137.8	1.1	0.8
*2016-17 (P)	**34211.6	171.7	0.5	41623.6	163.5	0.4	130.7	1.1	0.8

Source: Annual Report 2016-17, Ministry of Micro, Small and Medium Enterprises, Government of India & Khadi and Village Industries Board, Kerala *Provisional ** Figures from Khadi and Village Industries Board, Kerala

1.1 lakh in 2015-16. Production increased during the period but sales of the sector within the State showed a downward trend. A major reason for decline in the number of workers engaged in the sector in Kerala is the migration of workers to better paying jobs in other sectors or for higher education. Non-availability of sufficient raw-material for large-scale production, boom in the growth of the power looms industry in the country, shift in the nature of demand for clothing and the

use of low productivity charkhas, looms and other accessories are the other major reason for the poor performance of this sector.

The allocation of funds from various sources to Khadi and Village Industries Board and the expenditure incurred by the Khadi and Village Industries Board in 2015-16 and 2016-17 are shown in **Table 3.1.11**.

Table 3.1.11
Fund Allocated to and Expenditure Incurred by K&VI Board in Kerala (₹ in lakh)

Particulars	2015-16		2016-17	
	Outlay	Expenditure	Outlay	Expenditure
State Government Grant – PLAN	196.0	196.0	1399.0	1010.0
1. Administrative Expenses (Budget provision)				
2. Income Support Scheme (Fund through DIC)	2700.0	2700.0	2964.5	2964.5
State Government Grant – NON-PLAN				
1.Non- Plan – Administrative Expenses	3037.2	3575.3	3493.0	3845.1
2.Non- Plan - Special Rebate	2213.0	2213.0	785.0	785.0
KVIC Grant				
PMEGP - Margin Money Grant	819.46	819.5	848.0	994.7
Grant for District Awareness Camps and District Level Exhibition of PMEGP	1.2	1.2	2.2	2.2
Grant for stationery, Publicity, TA, Expense for the Scheme PMEGP	2.2	2.2	2.5	2.5

Source: Khadi and Village Industries Board, GOK.

Plan Outlay and Expenditure during 12th Five-Year Plan

The outlay provided for the sector during 12th Five year Plan is ₹6,735.2 lakh and the expenditure is ₹6,236.2 lakh. The Plan expenditure was higher than Plan outlay in 2012-13 and 2013-14 periods. However, in 2014-15 the expenditure was only 24 per cent against the outlay of ₹1,397.6 lakh. This was because of the delay in release of funds by the Government. In 2015-16 and 2016-17, expenditure increased to 80 per cent and 72 per cent respectively of Plan outlays. The financial details during 12th Five-Year Plan are given in **Table 3.1.12**.

Budget 2017-18

The outlay provided in the Annual Plan 2017-18, for the sector is ₹1,691.0 lakh and the expenditure up to October 30, 2017 is ₹488.6 lakh (28.9 per cent). The number of schemes implemented in the sector is 11, which include a new scheme 'Khadi Gramam Programme. This programme aims at providing 3,000 charkhas and 2,000 looms at household levels to provide employment to 5,000 people in five years. The scheme-wise details of outlay and expenditure are provided in **Appendix 3.1.40**.

Some of the major schemes implemented by Khadi and Village Industries Board in Kerala are the following:

Expansion and Modernisation of Silver Project at Etukudukka in Kannur District

The scheme intends to enhance the production of silver products by developing the existing silver project at Etukudukka in Kannur District. It aims to supply quality silver at affordable price required for the spinners in the departmental production centres. The scheme includes purchase of machinery, procurement of raw materials and provision of infrastructure facilities, etc.

Production/Festival Incentives to Khadi Spinners and Weavers

The scheme aims to provide production incentives to spinners and weavers in the Khadi sector. In addition to this, festival allowance is also given to khadi artisans during Onam season.

Establishment and Strengthening of Departmental Village Industries Units

The scheme is intended to strengthen the activities of handmade paper unit, studio pottery unit, oil units and readymade garments units.

Table 3.1.12
Financial Performance During 12th Five-Year Plan

Year	Outlay	Expenditure	Percentage
2012-13	1210.0	1306.0	108.0
2013-14	1331.0	2490.0	187.0
2014-15	1397.6	341.6	24.0
2015-16	1397.6	1114.6	80.0
2016-17	1399.0	1010.0	72.2
Grand total	6735.2	6262.2	93.0

Source: Budget 2012-13 to 2015-16, Accounts and Planspace

Special Employment Generation Programme

It proposes to provide margin money subsidy to small entrepreneurs and traditional artisans for bank linked projects (based on appraisal of the project by competent authority).

Development of Bee-keeping Industry

This scheme aims to promote bee-keeping activities by supplying bee boxes with colony at subsidized rate to motivate bee keepers. It also imparts training in bee keeping. The scheme also envisages establishing 2 permanent bee keeping centres with a bee nursery in two districts in 2018-19.

Khadi Gramam Programme

This programme aims at providing 3000 charkhas and 2,000 looms at household levels which would create employment opportunities for 5000 people in five years.

Moreover, goods worth ₹582.0 crore has been produced through the aided units of the K&VI Board and goods worth ₹596.0 crore has been sold including the closing stock of previous year, thereby providing employment to 1,47,355 persons. It is observed that the productivity per person is much higher in K&VI aided units than in K&VI departmental units. The production, sales and wages paid and employment generated in 2015-16 and 2016-17 is provided in **Appendix 3.1.41**. District-wise details of departmental sales outlets and sales under K&VI Board for 2015-16 and 2016-17 is provided in **Appendix 3.1.42**.

The Prime Minister's Employment Generation Programme (PMEGP) has been launched for generating employment opportunities through establishment of micro enterprises in rural as well as urban areas. Under the scheme, the government subsidy will be distributed to the beneficiaries/entrepreneurs in their bank accounts. The small scale entrepreneurs and traditional labourers, who did not get the benefits under PMEGP, were put under Special Employment Generation Programme (SEGP) scheme, in which financial

Box 3.1.9

Major Achievements of Khadi and Village Industries Board in 2016-17

- The Board has created 3,898 new employment opportunities through PMEGP Scheme in 2016-17.
- An amount of ₹1,006.0 lakh has been given as Margin Money Grant to beneficiaries.
- The Board has established 431 new industrial units having total project cost of ₹3,017.1 lakh through PMEGP Scheme during 2016-17.
- Provided production incentive/festival allowance to 10,600 Khadi artisans.
- Provided workshop, repair of building, charkhas, looms, purchase of spare parts, stools, tables, toilet facility, electrification, drinking water facilities and construction of compound walls.
- Festival allowance to khadi workers enhanced to ₹1,250/- and disbursed to them during Onam.
- During 2016-17, the Board has disbursed ₹30.0 crore to khadi workers in the State to ensure minimum wages to them through Income Support Scheme.
- The Board provided fund to institutions for purchasing charkhas and spare parts for repairing looms, warping unit etc under the Financial Assistance to Khadi Co-operatives/Institutions scheme.
- Fund has been transferred to district offices under the Special Employment Generation Programme. Process of selecting entrepreneurs by task force committee is going on.
- Under the scheme 'Development of Bee-keeping Industry', fund has been disbursed to Pathanamthitta District to provide training to 75 bee-keepers.

support has been given to the small scale entrepreneurs and traditional labourers. Khadi and Village Industries Board implemented the scheme as “Ente Gramam” in 2016-17. The total project cost for the programme in 2016-17 was ₹556.0 lakh. The programme helped the creation of 245 units and generation of employment for 737 people. The details of district-wise achievement under self-employment generation programme for the year 2016-17 are provided in **Appendix 3.1.43**.

Technology and Value Addition

Readymade garments are produced using Khadi cloth. Khadi industry employs traditional technology. The Board aims to improve the production capacity of its existing facilities with the assistance of IIT Madras. The Board proposes to create 10,000 new employment opportunities in the Khadi sector during the 13th Five-Year Plan period.

Marketing 2016-17

The Board has 209 sales outlets for Khadi and Village Industries goods. (42 Khadi Grama Soubhagya, 51 Khadi Soubhagya, 116 Grama Soubhagya (GS Depot) and 3 mobile sales van). The Board has conducted Onam Melas in 2016. Sales through Onam Mela 2016 were ₹30.4 crore against the target for ₹27 crore. The State level Onam Melas 2017 was held at Thiruvananthapuram and the sales target was ₹36.5 crore. District-wise sales achievements for the year 2016-17 (Up to March 31, 2017) are given in **Appendix 3.1.44**.

Constraints and Strategies of Khadi and Village Industry

As already noted, a major challenge for the Khadi & Village Industries sector in Kerala is the migration of its workers to more attractive and remunerative opportunities in other sectors. Other causes for the stagnancy prevailing in this sector are, surplus stock of unsold Khadi, shortfall in

availing credits and loan from banks, lack of adoption of new marketing techniques, lack of product innovation, low quality of products and high cost of production. Effective steps will be taken for the extension of marketing facilities and strengthening of research and development through other support institutions.

The Board will take effective steps to promote entrepreneurship and employment creation in the Khadi and Village industries sector, encourage mechanization in the pre-processing stages, and implement welfare measure for the workers in this sector.

COIR INDUSTRY

India is the largest producer of coir in the world, accounting for more than 80 per cent of the production of coir fibre globally. Coir and coir products have been exported to 116 countries including China, USA, Netherlands, South Korea and Spain etc. Coir industry first emerged in Kerala in the 19th century. The State's long coast line, lakes, lagoons and backwaters provided natural condition required for retting, an important part in coir processing. With the expansion of coconut cultivation, coir industry has picked up in Tamil Nadu, Karnataka, Andhra Pradesh, Orissa, West Bengal, Maharashtra, Assam and Tripura.

Kerala accounts for major portion of the total production of coir in the country. The coir industry comprises four sectors. They are: retting and fibre extraction sector, spinning sector, manufacturing sector and export sector. This agro-based rural industry provides sustenance to around 2 lakh families in the coastal belt of Kerala. There are estimates which suggest that 3.75 lakh persons are employed in this industry (both in co-operative and private sector) in the State, and 80 per cent of all workers are women. (Source: Directorate of Coir Development Department).

The co-operative sector plays a major role in the coir industry in Kerala. The private sector too has a large presence in the industry as, coir yarn producers, product manufacturers and exporters.

Directorate of Coir Development and Agencies in Coir Sector

The activities and programmes of the coir sector in Kerala are co-ordinated by Directorate of Coir Development, Government of Kerala. The Directorate also acts as a facilitator for the promotion of the coir industry in the State. Kerala State Co-operative Coir Marketing Federation (COIRFED), Kerala State Coir Corporation Ltd (KSCC), Foam Mattings India Limited (FOMIL), National Coir Research and Management Institute (NCRMI), Central Coir Research Institute and Coir Board are the other important institutions for the promotion of coir industry. Coir Board with its head office at Kochi, Kerala is the arm of the Central Government for development and promotion of Coir Industry.

The Kerala State Co-operative Coir Marketing Federation (Coirfed)

Coirfed is the apex federation of primary coir co-operative societies spread all over Kerala. It is entrusted with the task of procuring products from co-operative societies and marketing them. At present Coirfed has two factories engaged in the manufacture of value added products – one producing rubberized coir products and the other rubber backed coir mats. Coirfed has four defibering units.

Co-operatives in Coir Sector

Coir co-operative societies play substantial role in collecting husk, defibering and producing varieties of coir products in Kerala. There are 1,001 co-operatives registered in the coir sector as on March 31st 2017. As per the report of the Coir Directorate, number of registered societies decreased by 7 in 2016-17. But the number of working societies increased from 544 to 564. Details of the societies are shown in **Appendix 3.1.45**.

Kerala State Coir Corporation (KSCC)

KSCC was set up in 1969 for the systematic development of coir industry in the State. It caters to the needs of the small scale coir manufacturers by providing them facilities for manufacturing and marketing. It's diversified operations include curled coir manufacturing and allied products sectors. KSCC has been implementing the Purchase Price Stabilization (PPS) scheme in the coir sector. Under the scheme, the KSCC directly procures coir products from small scale producers, mats and mattings co-operatives and alike thereby avoiding middle men. The value of export by the corporation has increased from ₹8.14 crore in 2015-16 to ₹10.16 crore in 2016-17.

Foam Mattings India Ltd. (FOMIL)

FOMIL was established in 1979 to help the development of value-added coir products. It has emphasised the use of technology and machinery in coir industry. The company started a modern dye house in 2000 mainly to support the needs of exporters and powerloom. The value of exports from FOMIL was ₹13.05 lakh in 2015-16 and ₹56.41 lakh in 2016-17.

The National Coir Research and Management Institute (NCRMI)

NCRMI is a State Government institution set up to strengthen the R&D activities in coir sector to enable the industry in producing more value – added products and products with new designs at reasonable cost. Also NCRMI has been conducting studies for the development of new coir technologies in collaboration with similar research organizations across the country and even at the international level.

The Central Coir Research Institute

The Central Coir Research Institute is an important research centre of the Coir Board (Recognised

by the Department of Science and Technology, Government of India), which was established in 1959. It implements all the S and T programs for the development of the Coir Industry, at Kalavoor, Alappuzha.

Kerala State Coir Machinery Manufacturing Company Ltd. (KSCMMC) Alappuzha

KSCMMC has been set up in Alappuzha to provide machineries needed in coir sector in Kerala and the company was commissioned in February 2014.

The main aim behind the setting up of KSCMMC is the speedy mechanisation in coir sector in Kerala by providing electronic ratts, automated spinning machines, defibering machine, willowing machine and allied machines required for the coir industry.

Performance of Coir sector in Kerala

The total Plan outlay and expenditure for the coir sector during 12th Five-Year Plan period

(2012-17) was ₹562.95 crore and ₹448.6 crore (79.7 per cent) respectively. The total outlay provided in the Annual Plan 2017-18 for the sector is ₹128.1 crore and the expenditure up to October 2017 is ₹14.1crore (10.9 per cent). Outlay and expenditure for major schemes during 12th Five-Year Plan (2012-17) and Annual Plan 2017-18 are given in **Table 3.1.13.**

Physical Analysis of Major schemes implemented by Directorate of Coir Development in 2016-17

1. Mechanisation and Infrastructure Development of Coir Industry

This scheme is for undertaking modernization, rejuvenation and various infrastructure development activities in coir co-operatives. As part of the scheme 290 Automatic spinning machines were installed and different infrastructural activities were undertaken in 2016-17.

Table 3.1.13
Outlay and Expenditure for Major Schemes in Coir Sector, ₹ in crore

Sl. No	Schemes	12th Five-Year Plan			Annual Plan 2017-18		
		Outlay	Expenditure	Per cent	Outlay	Expenditure	Per cent
1	Mechanization and Infrastructure Development of Coir Industry	325.4	162.7	50.0	45.0	1.3	2.8
2	Marketing, Publicity, Propaganda Trade Exhibitions and Assistance for Setting up of Showrooms	33.5	28.7	85.7	8.8	0.03	0.3
3	Price Fluctuation Fund intended to stabilize the price of coir fibre, and yarn	95.0	148.9	156.7	48.7	2.6	5.3
4	Coir Geo Textiles Development Programme	1.5	5.0	333.0	0.30	.15	50.0
5	Production and Marketing Incentive scheme	20.0	23.9	119.5	5.5	5.4	98.2
6	Market Development Assistance for the Sale of Coir and Coir Products	30.0	30.0	100.0	8.8	3.3	37.5

2. Marketing, Publicity, Propaganda Trade Exhibitions and Assistance for Setting up of Showrooms

This scheme intends to popularize and strengthen various marketing activities in the coir sector. In 2016-17, Coir Kerala – 2016, an online promotion of coir products was undertaken as part of the scheme.

3. Price Fluctuation Fund intended to stabilize the price of coir fibre and yarn.

This scheme intends to stabilize the price of coir fibre, yarn and coir products. As part of the scheme, assistance was given to Kerala State Coir Corporation, COIRFED, FOMIL, to compensate their losses in the market. Assistance was given to KSCC and Coirfed and one lakh quintal coir yarn and coir products worth ₹100 crore have been procured.

4. Coir Geo Textiles Development Programme

This programme is intended to implement projects for including geo textiles as a standard engineering material. Research assistance was provided to NCRMI with this objective. Conducted demonstration of use and established environmental friendly application of Coir-geotextiles. Training was given to 2,000 workers in 2016-17.

5. Production and Marketing Incentive scheme

The Scheme is for providing assistance to promote production, marketing and exports of coir and coir products. Production and marketing incentives were given to 524 coir co-operatives in 2016-17.

6. Market Development Assistance for the Sale of Coir and Coir Products.

This scheme is targeted at publicity, opening of new showrooms, renovation of existing sales outlets, go downs, market study and marketing strategies etc. In 2016-17, Market Development Assistance was given to 25 coir mats and mattings societies, Kerala State Coir Corporation, Coirfed and FOMIL.

Procurement of Husk and Production of Yarn and Fibre in Co-operative sector

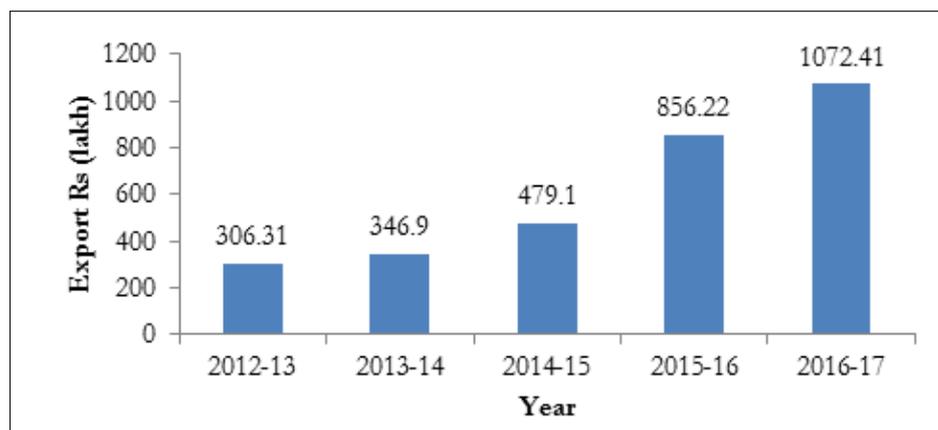
In 2016-17, coir co-operatives in Kerala procured 1.13 crore quantity of husk by spending an amount of ₹1.42 crore, purchased 11,745.08 tonnes of fibre at a cost of ₹22.34 crore and produced 10,740.06 tonnes of coir yarn worth ₹42.96 crore. In 2016-17, there were 436 coir co-operative societies in Kerala in the production of coir yarn and 93 co-operative societies in the coir products sector. Total wages paid in the coir yarn sector and coir products sector were ₹28.94 crore and ₹7.53 crore respectively. It is clear that actual wages paid to each worker in the coir sector is very meagre. Details of activities of coir co-operative societies for the last 6 years are shown in **Appendix 3.1.46**.

Export of Coir and Coir Products

The export of coir and coir products from India in quantity in 2016-17 was 9,57,045 MT valued at ₹2,281.65 crore against 7,52,020 MT valued at ₹1,901.43 crore in the previous year. Exports of coir and coir products recorded an overall increase of 27.3 per cent in quantity and 20 per cent in value over the export of previous year. Coir pith, coir fibre, curled coir, coir rugs, coir rope, coir yarn, coir geo-textiles, handloom mats, handloom matting, power loom Mats and rubberized coir constitutes the major export items of the industry in 2016-17. The details of export of coir and coir products during last 5 years by public sector undertakings/COIRFED in Kerala are given in **Appendix 3.1.47** and **Figure 3.1.10**.

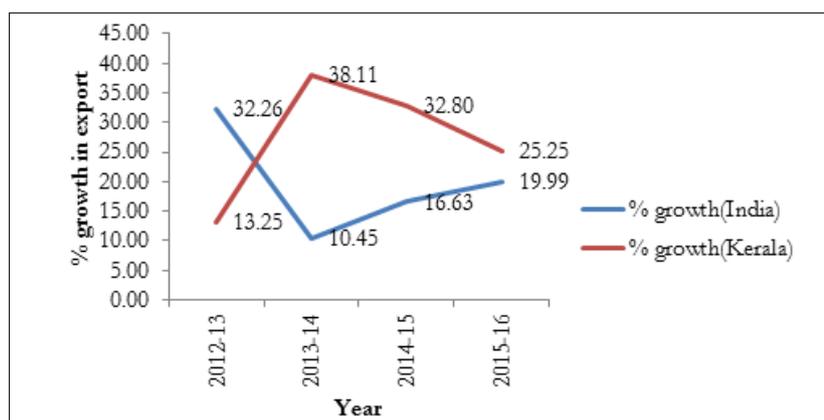
The export of coir and coir products of Public Sector Undertaking in Kerala shows a positive trend from 2012-13 to 2016-17. As compared to the previous years, export shows a hike of about 25 per cent in 2016-17. At national level, growth in production and export of coir and coir products is positive, although has been fluctuating over the years. **Figure 3.1.11** provides a comparison of the growth of exports of State PSUs and at the national level.

Figure 3.1.10
Export of Coir and Coir Products by State PSUs, 2012-13 to 2016-17 (₹ in lakh)



Source: Directorate of Coir Development, GOK.

Figure 3.1.11
Growth Rates of Export of State PSUs and National PSUs in Coir Sector (in per cent)



Source: Coir Board Statistics, Directorate of Coir Development, GOK.

Central Government Schemes in Coir Sector

Mahila Coir Yojana

The Mahila Coir Yojana is the first women oriented self-employment scheme in the coir industry which provides self-employment opportunities to the rural women artisan in regions producing coir fibre. The conversion of coir fibre into yarn on motorized ratt in rural households provides scope for large scale employment, improvement in productivity and quality, better working conditions and higher income to the workers. The scheme envisages distribution of motorised ratts

to women artisans in rural households provides scope for large scale employment, improvement in productivity and quality, better working conditions and higher income to the workers.

Coir Udyami Yojana

The Ministry through Coir Board is implementing a Central Sector scheme of Rejuvenation, Modernisation and Technology Upgradation of Coir Industry (REMOT), to facilitate sustainable development of the coir industry in the country. This will in turn generate more employment opportunities especially for women and the weaker sections of people in rural areas.

Box 3.1.10
Achievements of Coir industry in Kerala, 12th Five-Year Plan

- Husk Collection Scheme implemented effectively through Coir Co-operative Societies.
- Under Income Support Scheme, assistance was given to 28,041 coir workers during 2015-16 and 23,045 coir workers during 2016-17.
- Retirement benefit to coir workers – assistance given to 13,900 coir workers.
- Established Coir Composit Board Factory, Kanichukulangara.
- Financed Coirfed for Modernisation and expansion of PVC Tufted Unit.
- Established 68 DF machines in coir societies.
- Introduced application of coir geo textiles in association with NREGP works such as water conservation, prevention of soil erosion, construction of roads etc.
- Started Coir School at Alappuzha.
- Reconstituted Apex Body for Coir for effective monitoring of coir development programmes.
- Conducted International event for natural coir and allied products “Coir Kerala” in each year.
- Procurement of coir by COIRFED rose to 98,965.19 qntl. during 2016-17.
- Quantity of coir sold by Coirfed during 2016-17 is raised to 84,569.96 qntl.
- Annual turnover of Coirfed raised to ₹63.96 crore during 2016-17.
- The turnover of Kerala State Coir Corporation (KSCC) has increased from ₹293 lakh in 2006-07 to ₹10,500 lakh in 2016-2017 including PPSS (Purchase Price Stabilisation Scheme) turnover.

Coir Vikas Yojana

This scheme aims at all round sustainable development of coir industry through enhanced raw material utilisation, development of skills and employment of rural people, especially women, and marketing the coir products within the country and abroad.

Conclusion

Since coir is natural fibre and ‘return to nature’ is the slogan of the recent times, the industry has a better prospect in future years. The constraints facing the industry include weak procurement of coconut husk, increased cost of production, shortage of coir fibre, pollution in traditional method of ratting and husk beating, competition from synthetic materials, lack of professional management and migration of workers to other areas. These constraints will have to be addressed through innovative, scientific, and cost effective solutions.

CASHEW INDUSTRY

India’s cashewnut, the world favourite, is the third widely consumed edible tree nut (*Source: www.cashewinfo.com/cashew_facts.html*). In 2014, India’s production of raw cashewnut was 7, 37,000 metric tonnes, which accounted for 18 per cent of the total cashew production of 4,092,241 metric tons in the world. India continues to be the largest producer of raw cashew nut in the world. The other main producing countries are Vietnam, Brazil, Tanzania, Ivory Coast Guinea Bissau, Mozambique and Indonesia. According to the estimates by Directorate of Cashew nut and Cocoa Development (DCCD), the production of raw cashew nuts in India in 2016-17 was 779,335 MT as against the estimated production of 670,000 MT in 2015-16. Production of cashew nut in selected countries, 2011 to 2014 is given in **Table 3.1.14** and Shares of selected countries in total cashew nut production in the world is shown in **Figure 3.1.12**.

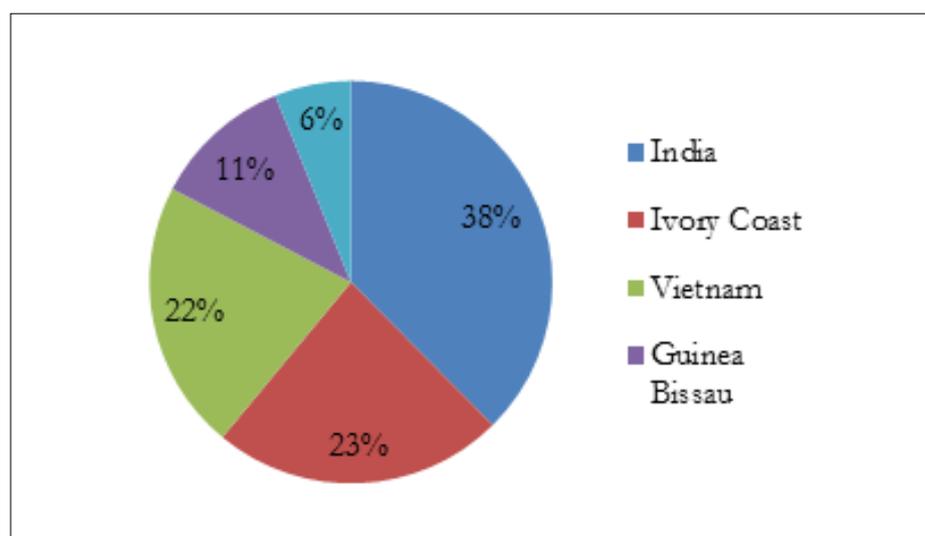
In India more than 50 per cent of cashew processing is carried out in the unorganised sector. There are nearly 1,800 medium to large and 2,200

Table 3.1.14
Production of Cashewnut in Selected Countries, 2011-2014, in Metric Tons (MT)

Countries	2011	2012	2013	2014
India	692000	674000	728000	737000
Ivory Coast	400000	460000	525000	460000
Vietnam	300002	264810	252000	425000
Guinea Bissau	190000	176400	158000	220000
Tanzania	149999	130000	126000	120000

Source: Cashew Export Promotion Council, Kollam

Figure 3.1.12
Shares of Selected Countries in Total Cashewnut Production in the World



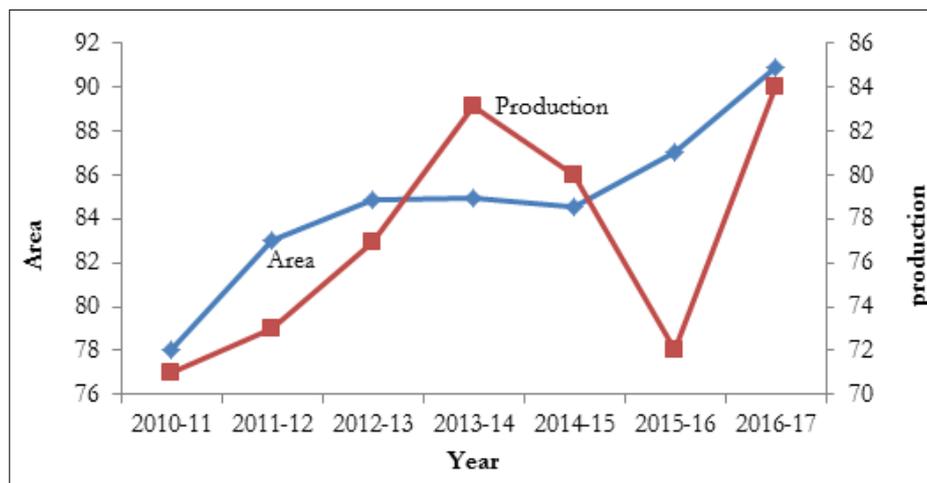
Source: Cashew export Promotion council, Kollam

on-farm level processing units, engaging mostly women workers. The major centres of cashew processing in India are in the States of Kerala, Karnataka, Goa, Maharashtra (all along the West Coast); Tamil Nadu, Andhra Pradesh, Orissa (all along the East Coast), West Bengal, Chhattisgarh, Gujarat, Jharkhand, and the North Eastern States. At present, the area under cashew is 10.4 lakh ha with a production of 7.8 lakh MT and productivity 753 kg/ha. India needs about 16.00 lakh tons of raw cashewnut to meet the requirements of nearly 1,800 medium to large and 2,200 on farm level processing units. The balance requirement to the tune of 8.9 lakh MT of raw cashew nuts is being met by importing rawnuts from African and South East Asian countries. In 2016-17, India imported 7.7 lakh MT of raw cashew nuts. (Source: DCCD, Kochi).

According to DGCI&S figures (Source: CEPCI, Kollam), cashew kernels exported from India in 2015-16 and 2016-17 were 96,346 MT and 82,302 MT respectively and they were valued at ₹4,952.1 crore and ₹5,168.8 crore respectively compared to 2015-16. Exports in 2016-17 decreased by 15 per cent in quantity and increased by 4 per cent in value. The major international markets for cashew kernels processed in India in 2016-17 were United States of America, United Arab Emirates (UAE), Japan, Saudi Arabia, Netherlands, France, Korea Republic of Germany, Belgium, Spain etc. Foreign exchange earnings of India from cashew industry, for the period from 2007-08 to 2016-17 is given in **Appendix 3.1.48**.

Among the major raw cashew producing states,

Figure 3.1.13
Area Under Cultivation and Production of Cashew in Kerala



Source: Directorate of Cashewnut and Cocoa Development, Kochi and Cashew Export Promotion Council, Kollam.

the production and productivity is the highest in Maharashtra. Majority of plantations in Maharashtra make use of clones of high yielding varieties, adopt good management practices and provide irrigation facilities. According to DCCD figures, as on 2016-17, Kerala ranks 5th in the production of raw cashew nuts. The State wise estimated area and production of cashewnut in India is given in **Appendix 3.1.49**.

Cashew Industry – Kerala scenario

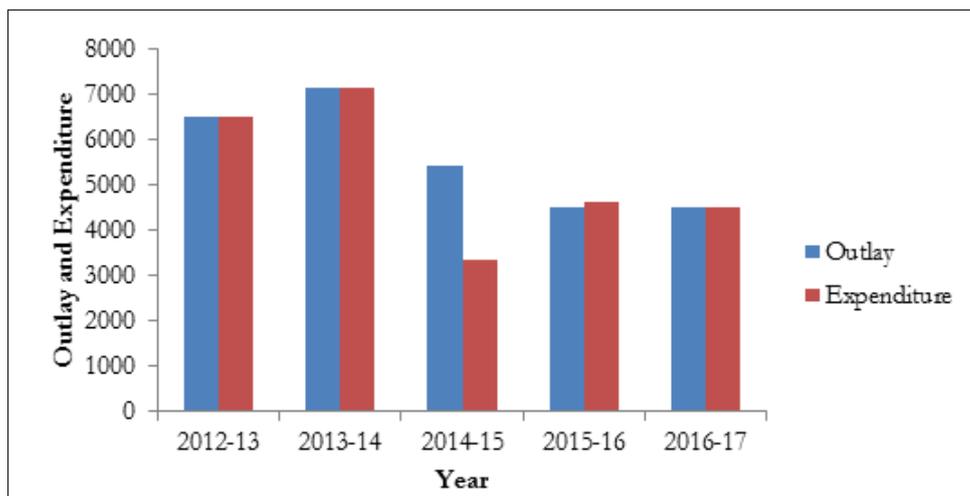
The cashew industry in Kerala is mainly concentrated in Kollam District. The Central Government recognises Kollam as a “Centre of Cashew Industry”. The industry is highly labour intensive and employs more than 1.5 lakh workers, a majority of them women (above 90 per cent). Thus the industry provides a source of income for a large number of low-income families.

In 2016-17, the export of cashew and cashew kernels through Cochin port was 38,054 mt. Kerala accounts for 11 percentage of cashew production and 35 per cent of all cashew processing units in India. The State needs around 6 lakh mt of raw

cashew in a year for catering to its 800 factories. As per the estimates of DCCD, Kochi, the area under cashew in Kerala is 90,870 Ha with a production of 83,980 MT and the productivity is 962 Kg/Ha. (Source: DCCD, Kochi). However, as per statistics of Directorate of Economics and Statistics, the area under cashew in Kerala is 41,660 Ha with a production of 27,944 MT and the productivity is 671 Kg/Ha. In case of Directorate of Cashew Nut and Cocoa Development, Kochi, basic data survey was carried out in 1990 to find out the exact area under cashew. Based on the data arrived in 1990, area expansion by the developmental departments in subsequent years is added to arrive at the current area under cashew. The production data is collected based on research parameters on sample survey basis. The data from both these directorates needs reconciliation.

With respect to production of raw cashewnuts, Kerala had the top rank among Indian states in the early 1990’s, but its position has now dropped to the 5th, behind Maharashtra, Andhra Pradesh, Orissa and Karnataka. Area as well as production of cashew for the period from 2010-11 to 2016-17 are depicted in **Figure 3.1.13**.

Figure 3.1.14
Financial Performance of Cashew Sector for the 12th Five-Year Plan Period



Source: Accounts and Planspace, State Planning Board

During the 11th Five-Year Plan, the State government allotted an amount of ₹186.50 crore for the cashew sector and the expenditure incurred in this sector was ₹179.10 crore (96 per cent).

The overall allocation by government for the cashew sector as part of the State's 12th Five-Year Plan programmes was ₹281 crore and expenditures incurred over the Plan period was ₹261.49 crore (93.06 per cent). **Table 3.1.15** provides the Plan outlay and expenditure during 12th Five-Year Plan and Annual Plan (2017-18).

Agencies in Cashew Processing in Kerala

The Kerala State Cashew Development

Corporation (KSCDC) and Kerala State Cashew Workers Apex Co-operative Society (CAPEX) are the two agencies of the State engaged in cashew processing sector in Kerala. The other agencies involved are Kerala State Agency for the Expansion of Cashew Cultivation (KSACC), Cashew Export Promotion Council of India (CEPCI), Directorate of Cashew nut and Cocoa Development.

The Kerala State Cashew Development Corporation (KSCDC)

The Kerala State Cashew Development Corporation (KSCDC) has 30 factories with about

Table 3.1.15
Plan Outlay and Plan Expenditure During the 12th Five Year Plan, ₹ in lakh

Departments	12th Five-Year Plan			Annual Plan 2017-18		
	Outlay	Expenditure	%	Outlay	Exp upto 9.10.2017	% (upto 9.10.2017)
CAPEX	6530	5529.9	84.7	225	200	88.8
KSCDC	19260	19060	98.9	4075	3000	73.6
KSACC	2310	1560	67.5	650	0	0
Total	28100	26149.9	93.06	4950	3200	64.6

Source : Accounts and Planspace, State Planning Board

11,000 workers. The Corporation processes raw cashew nuts and produces value added products. The Corporation provided average man days of employment of only 75 days in 2016-17 as against 106 days in 2015-16. The Corporation provided employment to 8,07,675 persons in 2016-17 and to 11,26,992 persons in 2015-16. The total turnover achieved was ₹8,499 lakh, which is 119.8 per cent higher than turnover of ₹3,866 lakh in the previous year. The Corporation incurred a loss of ₹1,944 lakh, which was 18.59 per cent less than the losses made in the previous year (₹2,388 lakh.) The performance of KSCDC over the last 9 years is given in **Appendix 3.1.50**. Modernisation of cashew sector and brand building, modernisation and upgradation of facilities and international brand building are the schemes implemented through KSCDC.

Lack of working capital, high raw material costs, high cost of processing rates in Kerala, high proportion of wages to total costs and highly competitive industry (both within India and internationally) are the major challenges faced by KSCDC.

Cashew Workers Apex Co-operative Society (CAPEX)

CAPEX with its headquarters in Kollam is the apex body of cashew workers primary societies. It is engaged in the procurement of raw cashew nuts and marketing of the processed kernels. The main objective of CAPEX is to organize cashew industry in the State on a commercial basis, render assistance to affiliated societies, in procurement and distribution of raw-nuts, make available funds for processing and marketing of kernels and other items produced in the factories of the affiliated societies. CAPEX commenced its commercial activities in the middle of 1985. The society owns 10 factories and one packing centre.

CAPEX provided average days of employment of only 120 days for its workers in 2016-17 as against 203 days in 2015-16. CAPEX has appointed 36

active franchisees all over Kerala and 6 franchisees outside Kerala to market CAPEX branded cashews. In 2016-17, CAPEX provided employment to 4,62,160 persons. The total turnover achieved in 2016-17 was ₹4,588 lakh, which was 37.76 per cent less than in the previous year of ₹7,371.5 lakh

Modernization and partial mechanization of cashew factories of CAPEX, brand building and market awareness in India and international market are the schemes implemented through CAPEX. The performance of CAPEX over the years is given in **Appendix 3.1.51**.

Achievements and Future Strategies

Globally, full mechanization has come into effect in a big way. Vietnam has now become the number one exporter of cashew globally, and India has been pushed to second spot. Still quality and taste of cashew from India is rated as supreme, because of the traditional way of processing. So CAPEX is exploring all the possible avenues to enhance productivity through mechanization without compromising quality. The sale, export and turnover of CAPEX are given in **Table 3.1.16**.

CAPEX is facing shortage of working capital. Given limited access to bank finance, it is fully functioning with Plan funds. Another problem is the non receipt of Plan funds in time, which slows down the timely procurement of cashew nuts when seasons are on. The raw nuts are seasonal agricultural product, which are to be procured during the season itself. CAPEX and its workers will benefit from ready availability of good quality of cashew raw materials from national and international market and it will also reduce the losses incurred by CAPEX.

A minimum 13,000 mt of raw nuts is necessary for giving continuous employment to the workers for more than 250 days. Continuous supply of raw nuts should be ensured through dynamic procurement strategies from domestic sources and imports. By providing regular employment to workers, traditional sectors of the industry will

Table 3.1.16
Achievements of CAPEX During the 12th Five-Year Plan Period, ₹ in lakh

Year	Domestic Sales	Export Sales	Total Turnover
2012-13	5309.4	1573.6	6883
2013-14	4229.6	2117.4	6347
2014-15	5944.5	1440.5	7385
2015-16	5906.1	1465.9	7372
2016-17	2631.3	1465.9	4588
Total	24020.9	8079.2	32575

Source: CAPEX, Kollam

get rejuvenated. The effort to generate additional export turnover with better margins including that of retail cashew kernels to boost the image of “CAPEX Cashews” will give a much needed competitive edge and better margin to CAPEX in the global market.

Kerala State Agency for the Expansion of Cashew Cultivation (KSACC)

Kerala State Agency for the Expansion of Cashew Cultivation (KSACC) was constituted by Government of Kerala in 2007. The agency, headquartered at Kollam, was formed to overcome the crisis in domestic production of cashew nuts which is largely due to reduction in of area under cashew cultivation in the State. The vision of the agency is to increase the domestic annual raw nut production from 65,000 mt to 150,000 mt in a phased manner through promotion of high yielding cashew grafts and a steady supply of RCN to the industry in Kerala. Since 2008, KSACC has been organizing promotional activities in cashew cultivation and distributing cashew grafts of high yielding varieties and financial assistance to farmers and institutions in the State. The agency has started the project ‘Cultivation of Organic Cashew and Establishment of Raw Nut Bank’ from 2007-08. The main objectives of the project are to enhance production and productivity of cashew by adopting modern technology and high yielding grafts. Accordingly, an additional 33,400

ha has been brought under the canopy of the project by KSACC during the period 2008-09 to 2017-18.

KSACC is the nodal agency for the cashew cultivation activities in Kerala, approved by National Horticulture Mission, Government of India. In the current financial year (30th August, 2017), agency distributed 80,000 nos of grafts (400 Ha approx.) to farmers/plantation under cultivation programme.

Cashew Export Promotion Council of India (CEPCI)

Cashew Export Promotion Council of India (CEPCI), GOI, was established at Kollam, with the object of promoting exports of cashew kernels and cashewnut shell liquid from India. The council operates Plan schemes of GOI, and offers various services to its member exporters. The council has set up a Laboratory and Technical Division of international standards which is recognised as an approved research centre for doctoral research by Kannur University and University of Kerala. The service of CEPC Lab is available to cashew industry as well as entire food processing industry in India and abroad. This Laboratory successfully established a laboratory quality system as per the standard described under ISO-IEC Guide 25 and the same has been accredited by the National Board for Accreditation of Testing and Calibration Laboratories (NABL) under the Department of Science and Technology, GOI.

Box 3.1.11
Cashew Board Limited – a New Initiative

To tackle various problems faced by the Cashew Industry in the State, a private Ltd Company was formed with an equity contribution of 49 per cent by Government and balance 51 per cent by KSCDC, CAPEX and similar other agencies and individuals as a special purpose vehicle. The main objectives of the Company are

- a) to procure and import raw cashew either within India or outside; process, value add and market the produce in domestic, international markets.
- b) supply raw cashew nut to domestic cashew processors at fair price
- c) to promote scientific cultivation of cashew involving land owners, processors and other stake holders to enhance domestic raw nut production.

Constraints in the Cashew Sector

The Cashew Industry in Kerala is operating under multiple constraints like paucity and high cost of raw materials (raw cashew nuts); high operating costs (wages) and a very competitive market for its finished goods (cashew kernels). Kerala, which used to be a dominant player in India and the world, has now fallen behind in cashew cultivation and cashew kernels production. Other states like Maharashtra, Orissa, Andhra Pradesh have taken over as leaders on raw cashew cultivation. These states have also entered into cashew processing in a big way through mechanical processing. Internationally, the African nations are dominant in raw cashew exports and Vietnam is the dominant cashew kernel exporter. The primary issue faced is the paucity and high costs of raw cashew nuts. This is due to lack of initiatives in increasing the cultivation of raw cashew nut in Kerala, which has resulted in the industry depending heavily on imports. Wage rates, welfare, safety and healthy working environment of the workers are also to be addressed. Also the problems like supply-demand imbalance, huge mechanization cost in processing sector and environmental issues are to be tackled, for the sustainable economic development of cashew sector in the State.

Developmental Goals

In the light of escalating demand for cashew, serious attention is needed to identify the gaps and

reorient research and development programmes in the area of cashew cultivation in the State. This is essential to attain self-sufficiency in raw cashew nut production. The State needs to take necessary steps to improve productivity, cultivation practices, loan facilities, warehousing facilities and food safety standards in the cashew processing sector. There is also a need for a comprehensive survey to understand the issues in cashew units, so as to re-focus research and development. Emphasis should be on employment generation with reasonable wage rate, research and development for the development of cashew production, processing, human resources, marketing strategies and development of new value added products of cashew including hand crafted cashew and utilization of cashew apples. Such measures will ensure greater value of Kerala cashew at the domestic and global markets.

INFORMATION TECHNOLOGY

Information technology is imperative not only for the development of modern industries but for the general well being of the State. Information and Communication Technology sector has been playing an important role in the development of the State, since the 9th Five-Year Plan. Realising its potential and critical importance, the State Government have made earnest efforts to create a sound and world class infrastructure for the sector and to develop the State's digital technology capacities and resources. This has enabled the State to be at the forefront in implementing information and communication technology projects, e-governance initiatives, e-literacy programmes and in the creation of basic IT infrastructure facilities. Currently the State has the highest mobile penetration in the country with about 32 million connections, the highest Internet penetration, covering about 20 per cent of households through broadband and another 15 per cent through mobile, and is making significant strides in transforming the State into a knowledge powered economy. Kerala is one of the significant IT destinations in India and ranks 8th in the export by Software Technology Parks of India (STPI) registered IT and ITeS (Information Technology enabled Services) units. Moreover, Kerala is fast emerging as a major player in the digital economy in India.

The information technology sector has recorded a steady growth over the last decade and various frontiers have been opening up in relation to the application of information technology in day to day life. From the emergence of artificial intelligence to self-driving vehicles and the extensive disruption brought about by the internet based business models, IT sector has been revolutionising every sector in the economy. To stay competitive as an IT destination, the IT sector in Kerala must significantly enhance the value addition it brings

to the State economy. It must attract investment in emerging areas in the IT sector and not rely solely on established IT/ITES activities. As the Indian IT sector as a whole grapples with issues of the changing focus and emerging issues within the global IT sector, Kerala must also keep pace with these changes. At the same time, the considerable advancements that have been made in the digital empowerment of the population and the spread of IT awareness and use must continue to be built upon and developed with further investment in appropriate infrastructure that will continue to serve the State's needs over a period of time and not risk early obsolescence.

Government of Kerala recognises the critical importance of ICT as the key vehicle for the State's overall equitable development, reiterating its commitment to the sector, the Government revised the Information Technology Policy for the State in 2017. The vision of the State's policy is to establish Kerala as a knowledge powered digital society by 2020 through the application of digital technologies in the areas of digital citizenship, digital lifestyle and digital commerce; within the governing principles of freedom, ubiquity, inclusion, transparency, safety and security for all; aligned to technology trends, citizen and industry needs, to provide overall social and economic empowerment of citizens.

Kerala has a strong infrastructure and human resource strength to adopt digital facilities. We need to leap forward attracting substantial investment in IT sector and identify and promote young entrepreneurs through start ups.

Kerala State Information Technology Mission (KSITM), Indian Institute for Information Technology and Management – Kerala (IIITM-K), Technopark, Infopark, Cyberpark, Kerala State

Information Technology Infrastructure Ltd. (KSITIL), International Centre for Free and Open Source Software (ICFOSS), Kerala Start-up Mission (KSUM) and Centre for Development of Imaging Technology (C-DIT) are the major agencies involved in the implementation and promotion of Information Technology related activities in the State.

The State Government envisages expansion of IT industry in the State in a manner that benefits all the districts in the State. A hub and spoke model has been planned. Thiruvananthapuram (Technopark), Kochi (Infopark) and Kozhikode

(Cyber Park) will act as hubs and the remaining districts will be the spokes.

Government of Kerala provided an amount of ₹1,623.12 crore during Twelfth Five-Year Plan for the development of core IT infrastructure, ITes and e-governance activities. The expenditure incurred was ₹1,159.74 crore (71.5 per cent). In the Annual Plan 2017-18, the outlay earmarked for the sector was ₹5,49.31 crore, which is 13.76 per cent higher than the previous year. The details of Plan outlay and expenditure are given in **Table 3.1.17**.

Table 3.1.17
Plan Outlay and Expenditure, ₹ in lakh

Sl. No.	Agency	12th Five-Year Plan (2012-17)		Annual Plan 2016-17		Annual Plan 2017-18
		Outlay	Expenditure	Outlay	Expenditure	Outlay
1	Kerala State Information Technology Mission (KSITM)	46465	22143.24	13058	6235.04	14748.00
2	Indian Institute of Information Technology and Management – Kerala (IIITM – K)	7990	6454.12	2050	2050	5200.00
3	International Centre for Free and Open Source Software (ICFOSS)	830		220	220	500.00
4	Technopark	32146		7600	9552.28	8400.00
5	Infopark	26461	64188.04	6161	8689.43	6705.00
6	Cyber park	9037		2568	2510.57	2569.00
7	Kerala State Information Technology Infrastructure Ltd. (KSITIL)	16485	6575.66	5780	1075.66	5560.00
8	Indian Institute of Information Technology-Pala (IIITK Pala)	500	5925.00	500	500	2250.00
9	Startup Mission	22295	9320.90	10000	1977.71	7999.00
10	C-DIT					1000.00
	Others	103	1367.50	1		
	Total	162312	115974.46	47938	32810.68	54931.00

Source: Budget Estimate

Kerala State Information Technology Mission (KSITM)

Kerala State IT Mission is a society registered under the Travancore Cochin Literary Scientific and Charitable Societies Registration Act, 1955. It is an autonomous nodal IT implementation agency of the Department of Information Technology, Government of Kerala, which provides managerial and technical support to various initiatives of the Department.

The major objectives of KSITM are interface between the Government and the industry, interaction with potential investors, strengthening the IT/ITeS industry base, holding promotional

campaigns in the State, ICT dissemination to bridge the digital divide, e-governance, developing human resources for IT and ITeS and advising the Government on policy matters. As a result of these proactive policies and projects, Kerala achieved major progress in the transformational journey towards “Digital State”.

Some of the major achievements are shown below.

- Kerala emerged as the 1st digital State in the country, announced by the Hon’ble President of India in February 2016.
- Government of India commissioned India’s 1st high speed rural broadband network in Idukki.
- First State in the country to issue over 3 crore e-certificates.

Box 3.1.12 Major Programmes of KSITM

- Construction of Centre for e-Governance
- Computer Emergency Response Team-Kerala (CERT Kerala)
- Citizens Call Centre
- Department WAN
- e-District
- e-Government Procurement (e-GP)
- Establishment of Virtual IT cadre
- e-Office
- Friends
- Information and Data Exchange Advanced System (IDEAS)
- Investment Promotion Management Cell (IPMC)
- IPV4 to IPV6 Migration
- Kerala e-Governance Awards
- Kerala State Spatial Data Infrastructure (KSDI)
- Kerala State Wide Area Network (KSWAN)
- Mobile Governance
- PG Diploma in e-governance projects
- Secretariat Record Digitization
- Secretariat Wide Area Network (SECWAN)
- Service Plus
- State Data Centre, Co Bank Tower
- Video Conferencing
- Digital Literacy Programme
- Public Wi-Fi project
- NeGAP

- 100 per cent of the Grama Panchayats are connected through optical fibre network
- Over 2,600 Akshaya Centres (Common Service Centres) functioning in the State.
- Over 3.44 crore Aadhar enrolments.
- 100 per cent compliance to civil registrations on time
- Over 9,000 ATMs across the State enabling ease of access to banking
- High tele-density of 99 per cent, with a rapid increase in the usage of smart phones.
- High internet penetration of 40.18 per cent.
- Over 30,000 km OFC laid across the State.
- More than 99,500 e-tenders transacted through a single window for the last three years
- 2,000 free WiFi hotspots in public places across Kerala

E-governance Programmes of KSITM

In the present world, e-governance is an important tool for good governance by achieving transparency, reliability, and accountability in rendering services. Kerala has been a forerunner in e-governance and mobile governance by promoting and developing core infrastructure and e-literacy programmes.

E-office aims to conduct office procedures electronically thereby transforming government offices to paperless offices and bringing out the benefits of digital communication that ultimately leads to faster decision making. So far it has been implemented in 39 out of 42 departments in Secretariat and 22 departments outside Secretariat. The Government has decided to roll out e-office to Districts, Directorates and Taluk level.

Service Plus is a software designed and developed by NIC, under Ministry of IT. It configures and launches e-services quickly using its flexible workflow and has provision for dynamic design of application forms.

Core infrastructure for e-governance in the State consists of Kerala State Wide Area Network (KSWAN), Secretariat Wide Area Network (SECWAN), State Data Centre and State Service

Delivery Gateway (SSDG). KSWAN is the backbone of the State Information Infrastructure (SII), connecting Thiruvananthapuram, Kochi and Kozhikode extending to 14 districts and 152 Blocks Panchayats of the State. The network will also connect 3500 offices of Government Departments through wireless and a larger number through leased lines and LAN.

M-Keralam, the unified mobile application which will bring together all the services rendered by different Government departments under one umbrella is getting ready for launch with nearly 100 services.

E-government procurement (e-GP) is being implemented in the State, 53 government departments and 220 PSUs/autonomous bodies/government agencies are utilising the common e-Procurement system. 1,764 offices (under various government departments and government bodies) have been mapped into the e-Procurement system.

Friends Janaseva Kendras have been established in all the 14 district headquarters. In 2016-17, 16.31 lakh transactions were made and ₹183.48 crore revenue for the government was collected.

Akshaya is an innovative project launched on 18th November 2002 to bridge the digital divide. It works on public private participation mode. In the initial stages the objective of the project was to make at least one person in a family e-literate. Gradually focus of Akshaya shifted to citizen service centric mode. At present, 2,679 Akshaya Centres are functioning across the State giving employment to 7,774 persons. More than 700 Aadhaar enrolment centres are working successfully State-wide. More than 1,700 Akshaya Centres act as Banking Kiosks for different banks. 5.5 million citizens got enrolled under UID through Akshaya Centres. Enrolment under UID through Akshaya is 92.7 per cent against the national average of 62 per cent. Akshaya is also a premier agency in UID enrolment having generated 75 per cent of total UIDs in Kerala.

The details of Akshaya centres in Kerala are furnished in **Appendix 3.1.52**.

Awards and Accolades

- SKOCH Award 2016:- KSITM won the prestigious SKOCH 2016 National Award
- Platinum Award:- KSITM won Platinum Award for Digital Empowerment Campaign Project
- Order of Merit Award:- KSITM won Order of Merit Award for e-Voter Mobile Application, Akshaya Citizen Services and Kiosk Banking of Akshaya.
- IT Innovation Award 2016:-The e-voter mobile application by KSITM has bagged the NASSCOM-Kerala Management Association's best IT Innovation Award 2016
- e-India Award 2016: for digital literacy through Student Police Cadets.

Indian Institute of Information Technology and Management – Kerala (IIITM-K)

The Indian Institute of Information Technology and Management – Kerala was set up in the year 2000 as a premier institution of excellence in Science, Technology and Management. It emphasises quality education to students and develops professionals and leaders of high calibre imbued with values of entrepreneurship, ethics

and social responsibility. The institute focuses on education, research, development and training in applied information technology and management. The M Phil and MSc degree are awarded by Cochin University of Science and Technology (CUSAT) and post graduate diploma by Directorate of Technical Education, GOK. The major projects completed are Biometric Embedded System Security and Internet of Embedded Things, Software Engineering and Software Project Management Unit and Library and Information Service. Construction of a full-fledged residential academic campus for IIITM-K as per UGC/AICTE norms is in progress.

Technopark

Electronics Technology Parks – Kerala, popularly known as Technopark was setup under the auspicious of Government of Kerala as an autonomous body to create global standard infrastructure and to provide total support required for development of high technology industries. It was formally dedicated to the nation on November 18, 1995. Since then Technopark has been growing steadily both in size and employees strength. With the commissioning of Phase III, Technopark will become the largest IT Park in India with 330 acres of land, 9.3 million sq. ft built up area. Technopark through its companies, currently provides direct employment to 53,000 IT employees and offers an indirect employment for another 1,50,000 persons. With the launch of Technocity project in Kazhakkuttam, the largest integrated IT Township in 424 acres of land has become the first IT Corridor in Kerala. Technopark has charted out an ambitious target of creating 56000 new jobs

Box 3.1.13

Academic Programmes Offered at IIITM-K

- Masters Programme
- M.Phil Programme
- Ph.D Programme
- Postgraduate Diploma Programmes

Box 3.1.14
Technopark's Contribution to the State's Economy

- Annual production from the Campus – ₹12,000 crore
- Annual export from the campus – ₹5,000 crore
- Total Employment – 52,746
- The largest employment base campus in Kerala.
- Stimulates growth of secondary services like retail, hospitality, transportation and financial services in the city and suburbs.
- With the launch of Technocity projects in 424 acres of land, Kazhakootam – Kovalam (NH66), it has become the first IT corridor in Kerala.
- With the commissioning of phase III, Technopark will become one of the largest IT Parks in India

Source: Technopark

by 2020. Technopark has 5 campuses which is spread over 760 acres under various phases of development. Details of physical achievements and growth of Technopark are given in **Appendices 3.1.53 and 3.1.54.**

Land available with Technopark

Total land available with Technopark is 760 acres. The details of extent of land in its 5 campuses are shown below:-

- Phase I and II – 239.54 acres
- Phase III – 90.00 acres
- Technocity – 424.00 acres

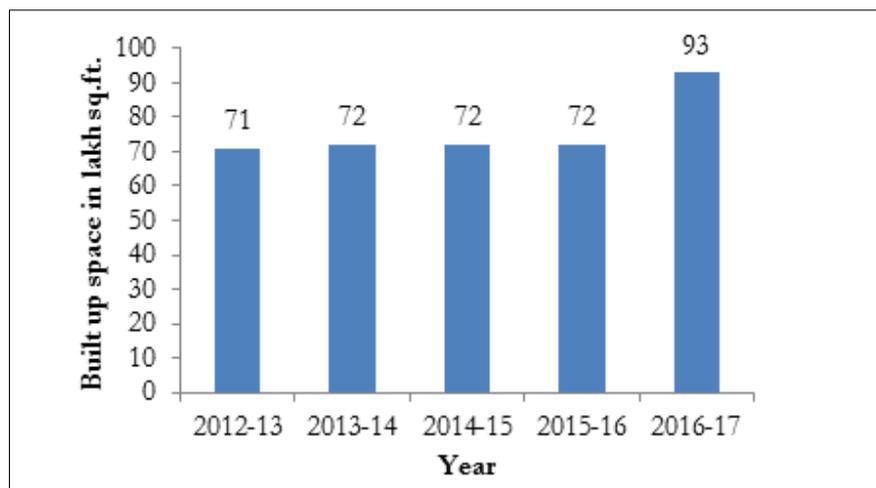
Growth of Built up Space in Technopark

The built up space in the Technopark has increased from 72 lakh sq feet in 2015-16 to 93 lakh sq feet in 2016-17. The growth of built up space in the Technopark is shown in **Figure 3.1.15.**

Companies in Technopark

There has been an increase in the number of the companies working in Technopark during the first 4 years of 12th Five-Year Plan. In 2012-13, there

Figure 3.1.15
Growth of Built-up Space in Technopark



Source: Technopark

were 285 companies in Technopark. It increased to 390 in 2015-16 and decreased to 370 in 2016-17 and remains the same as on 31/08/2017. The number of companies in Technopark from 2012-13 to 2016-17 is exhibited in **Figure 3.1.16**.

Growth of Export from Technopark

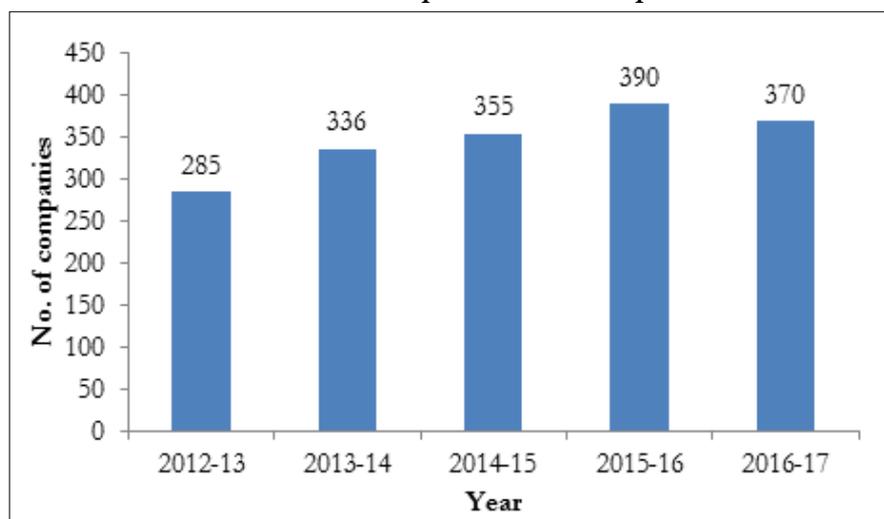
The exports from Technopark increased from ₹3,493 crore in 2012-13 to ₹6,250 crore in 2015-16. But in 2016-17, it declined to ₹5,000 crore. The elections and subsequent shift in policy in US affected India's software exports to the

country to a big extent. The trend in export from Technopark during the last five years is depicted in **Figure 3.1.17**.

Growth of Employment in Technopark

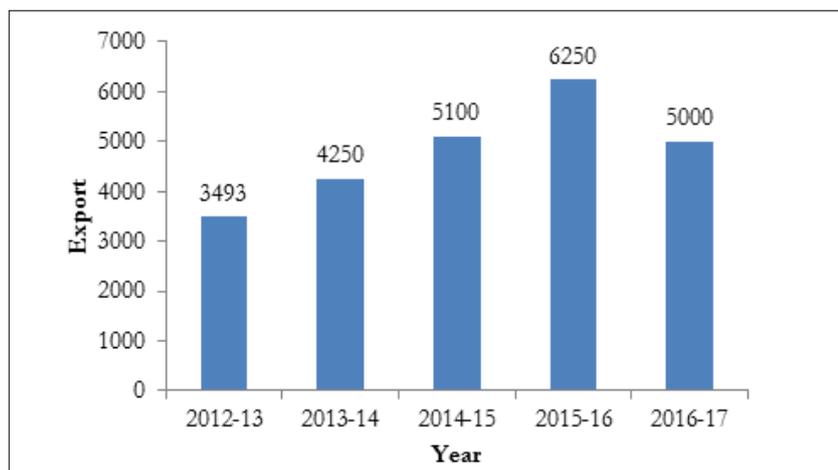
The growth of Technopark can also be analysed in terms of employment generated during the last five years. The employment generated increased from 40,521 in 2012-13 to 52,746 in 2016-17 (up to August 31, 2017). The growth of employment generation for the last five years is shown in **Figure 3.1.18**.

Figure 3.1.16
Number of Companies in Technopark



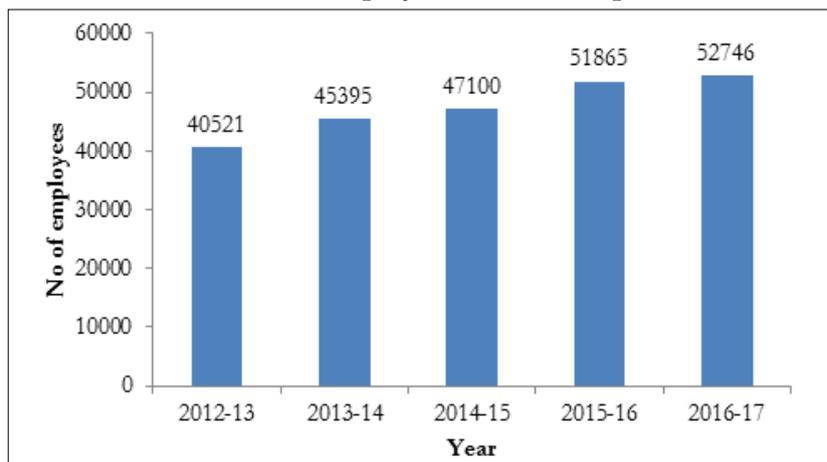
Source: Technopark

Figure 3.1.17
Export from Technopark



Source: Technopark

Figure 3.1.18
Growth of Employment in Technopark



Source: Technopark

Technocity

Technopark has acquired 424 acres of land at Pallipuram for its Technocity project. Work on basic infrastructure has commenced and land has been allotted to TCS, Infosys, Suntec, KASE and IIITM-K.

Infopark

Infopark, Kochi is the second largest IT hub in Kerala with spokes at Cherthala and Thrissur. The objective of Infopark is creation of state-of-art infrastructure facilities such as space for IT/ITeS companies, supply of power, water and connectivity etc.

At present Infopark has the following IT Parks at Kochi- Phase I spread over in 102.82 acres, Phase II in 160 acres, Infopark, Thrissur located at Koraty in 30 acres and Infopark, Cherthala in 66 acres of land.

Since its inception in 2004, Infopark and its co-developers created over 66 lakh sq. ft built up space and have provided employment to over 33,116 IT Professionals through 298 IT companies who have taken space in its Parks. In case of Infopark TBC, a built up partly fitted space of 25,845 sqft at Kaloor international stadium was taken over from KSITM in the year 2013. Infopark undertook necessary

balance fit outs, modifications/rectifications in the fitted out space and now the facility is mainly used for providing office space for startup companies. Around 400 IT employees are working in Infopark TBC. The physical achievements of Infopark are furnished in **Appendix 3.1.55**.

Cyberpark

Cyberpark was established in the lines of Technopark in Trivandrum and Infopark in Kochi based on a hub and spoke model. It was set up to bridge the IT infrastructure gap along the west coast starting from Kochi to Kasargod. The Cyber Park, Kozhikode acts as the hub and the parks in Kannur and Kasaragod are the spokes for the IT and infrastructure development of the northern region in the State. The objective of Cyberpark is to provide a friendly, cost effective and top of the line infrastructure to the IT/ITeS investors and thereby encouraging, promoting and boosting the export of software/software services and creating employment opportunities in Malabar region.

The major achievements during the last five years is shown below.

- First IT Building (2.88 lakh sq. ft) completed.
- Leasing of IT space at CFC which started operation during this period.

- Export revenue was ₹5 crore during XII Five-Year Plan period.
- Total employment generated during this period is around 150 numbers.
- Land acquisition and development completed.
- Basic infrastructure works completed.
- Water tank with 50,000 litres and water lines were commissioned.
- 200 KVA HT substation to meet the electricity requirement of the entire park has been completed.
- Park centre CFC (11,000 sq.ft) completed, with 4 IT units providing employment to 80 persons and generating export turnover of ₹3.50 crore.

The achievements of Cyberpark are given in **Appendix 3.1.56**.

*Kerala State
Information Technology
Infrastructure Ltd (KSITIL)*

Kerala State Information Technology Infrastructure Limited (KSITIL) is a public limited company formed under the Companies Act 1956. The company leverages the valuable land assets owned by the Government and through viable financial models, generates funds for building the IT Infrastructure in the State in a Private

Public Participation model. The business model of the company is to acquire land and develop basic infrastructure facilities like electricity, water, road and compound wall in the area, obtain SEZ status and other such Government approvals that may be required and then allot land to private developers for development of either IT SEZ or IT parks.

Major ongoing projects of KSITIL are Kozhikode IT Park, Kannur IT Park, Kasaragod IT Park, Kollam IT Park, Koratty IT Park, Cherthala IT Park, Ambalapuzha IT Park, Infocity Pala, IIIT-Kerala and Technolodges.

*International Centre
for Free and Open Source Software
(ICFOSS)*

Govt. of Kerala established International Centre for Free and Open Source Software (ICFOSS) as an international centre in collaboration with Free Software Organisations in India and abroad to promote development and application of free software and free knowledge. It is a nodal agency in all matters relating to free and open source software including consultancy, research and development, academics, studies and service, training, publishing, certification, international co-operation and collaboration. The major programmes of ICFOSS are shown in **Box 3.1.15**.

**Box 3.1.15
Major Programmes of ICFOSS**

- Start-up acceleration for FOSS enterprises.
- E-Governance and other FOSS studies.
- Localisation of accounting and other utility software.
- ICT support to Micro, Small and Medium Enterprises
- Technical workshops and training programmes
- FOSS certification
- Capacity building and skill up gradation for engineering/technology students.
- Malayalam computing.
- Research programme

Source: ICFOSS

Kerala Startup Mission (KSUM)

Kerala Start up Mission (KSUM) is the nodal agency of Govt. of Kerala for implementing the entrepreneurship development and incubation activities in the State. Kerala Start up Mission, formerly known as “Technopark Technology Business Incubator” is India’s first successful non academic business incubator. It started operations in 2007.

The objective of the Mission is to identify and develop entrepreneurial talents among youth and students in Kerala, address the technology based entrepreneurship development requirements in the traditional sectors of Kerala, build appropriate training programmes suitable for Kerala’s socio-economic culture, identify market niche for technology products and services, interfacing and networking among academic, R&D institutions, industries and financial institutions, establishing a platform for speedy commercialization of the technologies developed in the institutes to reach the end-users.

Government of Kerala has introduced Youth Entrepreneurship Development Programme targeted to foster entrepreneurship skills among the youth in Kerala which includes key initiatives like Raspberry Pi Programme, Startup Box Campaign, Startup Boot camp, Start up Leadership Academy and Training programme, International Entrepreneurial Exchange Programme, FABLAB Programme, Entrepreneurship Driving Programme, Performance Linked Scheme and Patent Support Scheme. In addition to the above, Govt. is creating a Technology Innovation Zone at KINFRA Hi Tech Park, Kalamassery with multiple sectors of incubators under a single umbrella.

The major achievements during the last 5 year period are as follows:

- The total number of incubators accelerators was 20 including 4 specialized incubators.
- The total value created during the XII Plan was ₹1,000 crore, creating an employment opportunity for 26,500 persons.
- Conducted 187 boot camps in Colleges.
- 30 Student Startups from boot camps.
- Conducted IEDC Summit (2000 + students)
- Distributed 84 Startup Box to startups/ incubators.
- 20,000 Raspberry Pi kits distributed.
- 5,483 Electronic kits distributed.
- 2 Silicon Valley Visit and support to 17 startups for intellectual visit.
- Established 2 Fab labs and 20 mini fab labs.
- Conducted 2 Fab Academy Courses.
- Seed support to 26 Startups.

Centre for Development of Imaging Technology (C-DIT)

Centre for Development of Imaging Technology (C-DIT) is an autonomous research and training institute under Government of Kerala. Apart from its initial role as an R and D organization in imaging technology and development of communication, C-DIT has done pioneering work in the State in integrating IT with governance, including the formation of Information Kerala Mission for computerization in all LSGIs, implementation of the flagship programme of FRIENDS citizen service centres and as a total solutions provider for providing services related to computerization in Government department and agencies.

IT Policy 2017

The new IT policy announced by the government in 2017 aims to generate projects which will mould Kerala into knowledge based society. The main objective of the policy is to establish Kerala as a leading IT destination and generate direct and indirect employment opportunities in the sector, build necessary technological infrastructure for creation of an environment favourable to ICT

Box 3.1.16
Approach for XIII Five-Year Plan

- Creation of more employment opportunities through the generating of one lakh jobs during XIII Plan.
- Making available trained human resources through ensuring skill development activities in all educational institutions.
- Development of an eco-system for start ups through the promotion of constant innovation through new startups and thereby developing new products and services.
- Enabling IT for the management and monitoring of the activities of the 4 Mission of the Government.
- Public access to high speed digital services by providing Wi-Fi hotspots.
- Integration of wide variety of data of Government departments, agencies and institutions on a single platform.

development, enhance the necessary human capital required to both produce and use innovative technologies through education and skill building and establish Kerala as an IT industry destination by attracting investments from within and outside Kerala. The policy aims to:

- Establish Kerala as a preferred IT and ITeS hub and leverage ICT to contribute significantly to GDP and employment.
- Create schemes to attract the global IT players to the parks.
- Create 1 crore sq. feet built up space and provide 2.5 lakh employment.
- Utilize the capabilities of corporative and the capital from NRIs to develop the parks
- Maintain a steady annual growth of exports in IT and ITeS service and products.
- Create a science and technology driven eco system for research and development and innovation.
- Increase the quality and competitiveness of small and medium IT enterprise and connect them to the international market.
- Foster technology entrepreneurship culture and create a sustainable start up ecosystem by creating technology hubs.
- Provide inclusive, affordable and accessible electronic service delivery system for public services.
- Ensure universal open access to data, information and knowledge resources in a digital domain.
- Make the State 100 per cent e-literate and utilize ICT in all walks of life to ensure equitable and inclusive development of the society.
- Give special emphasis to promote research and development in Malayalam language computing and develop tools for the same.
- Develop a talent pool within the State in skills for sunrise industries and human resources capabilities for emerging and futuristic technologies.
- Make IITM-K and ICFOSS as centres of excellence for research and development and studies in IT sector.
- Strengthen IT @ school.
- Create a safe framework for digital living in terms of cyber security, privacy and freedom of internet conduct training and awareness programmes and promote electronic transactions.
- Leverage IT in the day to day operations and in the delivery of services in hospitals.

- Adopt open source and open technologies in public domain and promote the same in SMEs and industry.
- Manufacturing of electronics goods/ components will be made possible among all including house wives.
- Strengthen the operation of Kenton so as to regain the prominence it had in the past.
- Research and development institutions shall be established in the area of convergence of IT and bio technology and technologies shall be utilized to improve the quality of exports in fruits and vegetables, fish and spices from Kerala.
- Create an infrastructure to enable women to work in the IT sector ensuring them safe transportation and secure environment at the work place.

Conclusion

Even though, Kerala has achieved remarkable progress in creating infrastructure for IT sector and generated employment opportunities during the last five year plans; the State lags behind in creating research and development infrastructure for establishing a knowledge economy. In the coming years, the State shall focus on developing competitive advantages in new avenues of IT. ICT enabled education, research and development and innovations in the sector needs to be identified and promoted to strengthen the State economy. Moreover, the thrust of government in infrastructure development, human resource development and overall economic development will open up large opportunities for the meaningful use of Information Technology.

3.2 TOURISM

International and regional tourism contributes to economic growth, job creation and development in nations all around the world. Tourism accounts for 10 per cent of global GDP, 7 per cent of total exports and one in 10 jobs across the world. In 2016, international tourist arrivals reached 1.2 billion. By 2030, 1.8 billion travellers are expected to cross international borders.

India is ranked at 40th position in the Travel and Tourism Competitive Index of World Economic Forum in 2017.

Kerala is blessed with varied geographical features that have made it one of the most sought after destinations in Asia. Tourism is the hallmark of Kerala's economic development and a principal contributor to the State's economy. Kerala is now recognised internationally as a tourist destination. Tourism enables balanced and sustainable regional growth by generating income and creating employment opportunities especially in trade, transport and hospitality sectors. The sector earns foreign exchange to the State and promotes traditional industries.

The share of tourism in Kerala's Gross State Domestic Product is about 10 per cent. Tourism creates employment, brings in incomes, and opens out cultures to the rest of the country and world. A feature of tourism is its interconnection with other spheres of development. Tourism cannot be successful without concurrent development in health, sanitation, urban and rural planning, transport, connectivity, local self-government and other spheres.

International Year of Sustainable Tourism for Development

The United Nations General Assembly declared 2017 as the International Year of Sustainable Tourism for Development. It thus recognised the potential of tourism to advance the universal 2030 Agenda for Sustainable Development. This declaration was made by the UN in recognition of tourism's contribution to the development agenda and to raise awareness of the potential of the sector to lead economic growth, social inclusion and cultural and environmental preservation.

12th Five-Year Plan Achievements

An amount of ₹1,101.4 crore was the budgeted outlay for the tourism sector during the 12th Five-Year Plan period and expenditure incurred was

₹1,046.37 crore (95 per cent). In addition to this, funds were mobilized through Supplementary Demand for Grants. Central financial assistance was also availed for destination development, fairs and events, and research oriented projects etc.

The department/agencies coming under the tourism sector are

1. Department of Tourism
2. Kerala Tourism Development Corporation(KTDC)
3. Kerala Tourism Infrastructure Ltd (KTIL)
4. Bekal Resorts Development Corporation (BRDC)
5. Eco Tourism Directorate
6. Kerala Institute of Tourism and travel Studies(KITTS)
7. Food Craft Institute (FCI)
8. State Institute of Hospitality Management (SIHM)

Box 3.2.1**2017 – International Year of Sustainable Tourism for Development**

The *International Year of Sustainable Tourism for Development* aims to support a change in policies, business practices and consumer behavior towards a more sustainable tourism sector than can contribute effectively to the SDGs.

The International Year will promote tourism's role in the following five key areas:

- Inclusive and sustainable economic growth;
- Social inclusiveness, employment and poverty reduction;
- Resource efficiency, environmental protection and climate change;
- Cultural values, diversity and heritage; and
- Mutual understanding, peace and security.

Source: World Tourism Organisation UNWTO

Major Schemes Implemented During 12th Five-Year Plan

1. *Upgradation, creation of infrastructure and amenities.* Improvements of major destinations were taken up through master plans. Department concentrated on providing basic facilities at destinations and ensuring safety and security of tourists.
2. *Marketing.* In order to retain the market supremacy, Kerala Tourism launched number of new and innovative marketing campaigns in both international and domestic markets.
3. *Kerala Tourism Promotions and Marketing Mechanism.* The Department of Tourism has been a regular participant in national and international tourism trade fairs. Kerala Tourism participated in the leading international tourism trade fairs.
4. *Muziris Heritage and Spice Route project-* The first phase of Muziris Heritage Project has been completed. This project covers networking of 100 museums, palaces, forts, temples, churches, synagogues, other historical monuments through waterways. Also the spice route initiative of the Department in association with UNESCO and other partner countries is developing into a unique global tourism product centered around the State.

5. *Responsible Tourism.* Community Participation in tourism development is successfully implemented in Kerala through Kerala Responsible Tourism (RT) initiative.

Summary of Achievements of the Schemes Implemented during 12th Five-Year Plan

A. Destination Development Initiatives

- Preparation of 30 year advance vision and development plans for Fort Kochi in Ernakulam, Kovalam-Poovar tourism corridor, Kumarakom in Kottayam and Thekkady and its surroundings.
- Preparation of Master Plans for Ashtamudi in Kollam District, Golden Valley in Thiruvananthapuram, Kakkayam-Peruvannamuzhy, Kalady-Malayattoor-Athirappally Tourism Circuit and Nilambur

B. Green Carpet Initiative for Destination Development

- Destination level task forces and monitoring cells.
- 10- Point Code of Conduct for tourist destinations in Kerala.

Table 3.2.1
Outlay and Expenditure in 12th Five-Year Plan and
Annual Plan 2017-18, ₹ in crore

Sl. No.	Department/Agency	12th Five Year Plan 2012-17		Annual Plan 2017-18	
		Outlay	Expenditure	Outlay	Expenditure (as on 30/9/17)
1	Department of Tourism	992.85	962.59	316.51	97.81
2	Kerala Tourism Development Corporation (KTDC)	32.00	19.00	7.20	
3	Kerala Tourism Infrastructure Ltd (KTIL)	11.00	8.91	1.67	
4	Bakel Resorts Development Corporation (BRDC)	7.00	3.45	3.00	
5	Eco Tourism Directorate	17.05	15.44	3.85	
6	Kerala Institute for Tourism and Travel Studies (KITTS), Food Craft Institute (FCI) and State Institute of Hospitality Management (SIHM)	41.50	36.98	10.50	.5
	Total	1101.40	1046.37	342.73	98.31

Source: Annual Plan documents, Kerala State Planning Board

C. Marketing Initiatives of Kerala Tourism

- Spice Route International Culinary Festival featuring 17 teams from 15 countries
- Maya, the first ever WhatsApp campaign by a State
- Kerala branded taxis in Middle East
- Declared 2015-16 as Visit Kerala Year
- Visit Kerala - National Campaign activities
- Participation in 42 International Trade Fairs and 68 International Road shows
- National Partnership Meet in 37 Indian cities, National Trade Fairs in 50 Indian cities and National Dream Season Campaign
- Digital Campaigns - Dream Deals, Social Media Optimization and Trip Advisor Campaign

D. IT Initiatives of Kerala Tourism

- Website in 11 international and 10 indian languages
- Responsive design of the website
- Developed virtual movies of important destinations and Virtual Video Wall displaying best visuals of Kerala
- Live webcast of festivals and events of HD quality in the website
- Developed a geo-coded calendar of the 100 Theyam festivals in Malabar, A geo-coded monsoon calendar detailing the festivals and events held during monsoon season and an advanced online tour planner
- A new Message Board for travel industry with advanced features and simplified registration procedures
- Online accreditation facility for tour operators
- Audio visual guide on Kerala cuisine

- Kerala Tourism has received several awards and citations for tourism related activities. These awards are the direct result of the concerted efforts of both the public and private sector working together to take Kerala's tourism industry to a world class level.

Review of Tourism Sector 2016-17

World Scenario

International tourist arrivals across the globe grew by 4 per cent in 2016 to reach a total of 1.2 billion in 2016. This was the seventh consecutive year of above-average growth with international arrivals increasing by 4 per cent or more every year since the post-crisis year of 2010. The year 2016 witnessed growth in international tourist arrivals of some 46 million over 2015. Growth in advanced economy destinations (+5 per cent) exceeded that of emerging economies (+2 per cent) in 2016. Asia and the Pacific are the most visited regions in the world after Europe. A major share of international tourist arrival is from France (6.7 per cent), USA and Spain (6.1 per cent). India's contribution is 1.2 per cent. China is fast becoming the main source market for many destinations including those

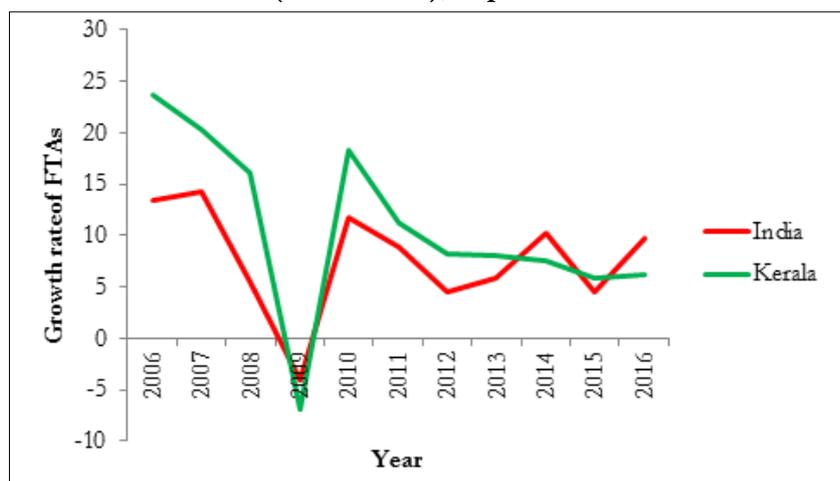
within Asia and Pacific. United Kingdom and United States of America are the major countries availing e-tourist visas in 2016.

RECENT TRENDS IN FOREIGN TOURIST ARRIVALS

In 2016, the number of foreign tourist arrivals in India was 8.80 million as compared to 8.3 million in 2015, thus registering a growth of 9.68 per cent over 2015. Kerala's share in country's tourism in 2016 was 11.79 per cent against 12.18 per cent in 2015. **Figure 3.2.1** portrays the trends in the arrival of foreign tourists in India and Kerala.

The growth rate in Kerala with respect to foreign tourists arrivals is higher than that of India. But the national average surpassed the State annual growth rate of foreign tourist arrivals in 2014 for the first time in a decade. Further the State has been witnessing a declining growth rate especially after 2010. In 2010, the growth rate was 18.31 per cent, which dropped to 8.12 per cent by 2013 and further to 5.86 per cent in 2015. In 2016, it is 6.23 per cent higher than previous year. **Appendix 3.2.1** shows the national and State foreign tourist arrivals and annual growth rate from 2006 onwards.

Figure 3.2.1
Annual Growth Rates in the Arrival of Foreign Tourists in India and Kerala (2006 to 2016), in per cent



Source: Department of Tourism, Government of Kerala

Seasonality in Foreign Tourist Arrivals

The month wise analysis of foreign tourist arrival in India indicates that during 2016, the maximum number of foreign tourists arrived in the month of December followed by November. A similar trend is visible in 2015 also. During 2015 and in 2016, the maximum number of foreign tourists arrived in Kerala during the month of February followed by January. In 2016, around 13.6 per cent of the total foreign tourists visited the State during February and the lowest foreign traffic was registered for the month of June. **Figure 3.2.2** depicts the month- wise comparison of foreign tourists arrival in Kerala from 2010 to 2016.

Source Market of Tourist arrivals

The country wise details of foreign tourist arrivals into India in 2016 reveals that about 15.68 per cent of the foreign tourists were coming from Bangladesh followed by United States (14.73) and United Kingdom (10.70).

In Kerala, United Kingdom, with a percentage share of 15 per cent remains at the top of list of the countries from where foreign tourists come to the State. USA occupied the second position with a 8.5 per cent share. Saudi Arabia (8.4 per cent) and France (7.7 per cent) contribute the next major shares of foreign tourists arrivals. **Appendix 3.2.2** gives the share of major international

source markets of Kerala Tourism in 2016 and **Figure 3.2.3** portrays the share of foreign tourist arrival to Kerala from top ten countries of the world from 2007 to 2016.

District-Wise Foreign Tourist Arrival

For the last few years, the two districts which recorded largest foreign tourist arrivals in the State are Thiruvananthapuram and Ernakulam. During the reporting period, 4,07,653 foreign tourists visited Ernakulam and 3,83,608 tourists visited Thiruvananthapuram. Details are given in **Appendix 3.2.3**.

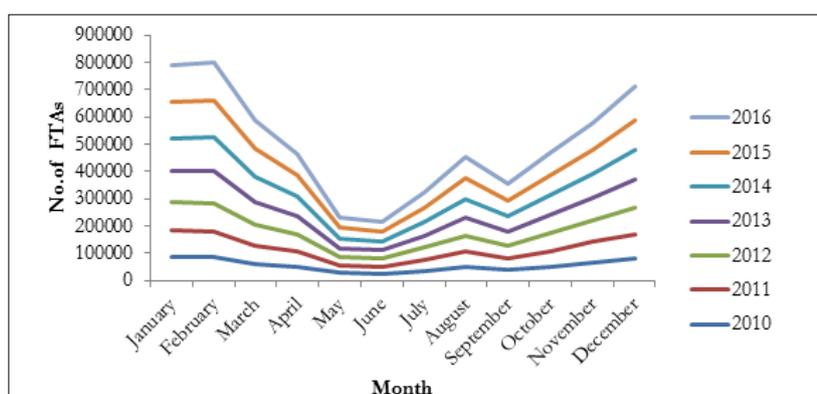
Domestic Tourist Arrivals

The number of domestic tourists arrivals to Kerala during 2016 is 1,31,72,535. It indicates an increase of 5.67 per cent over 2015. Domestic tourist earnings for the reporting period was ₹15,348 crore and it is 10.93 per cent higher than the previous year. **Appendix 3.2.4** gives the details of domestic tourist arrivals to Kerala during 2016.

Month-wise arrival of Domestic Tourists in Kerala

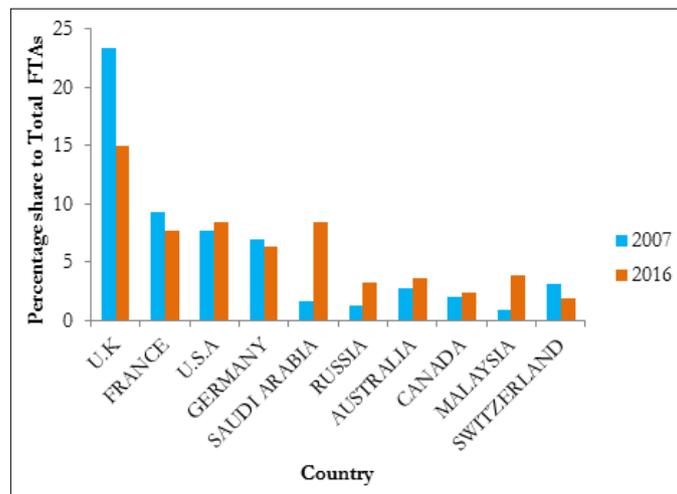
The month-wise data on the arrival of domestic tourists in Kerala during 2016 shows that the highest inflow of tourists was for the month of

Figure 3.2.2
Month-wise Comparison of Foreign Tourist Arrival in Kerala from 2010 to 2016, in number



Source: Department of Tourism, Government of Kerala

Figure 3.2.3
Share of Foreign Tourist Arrival from Top 10 Countries of the World
between 2007 and 2016, in per cent



Source: Department of Tourism, Government of Kerala

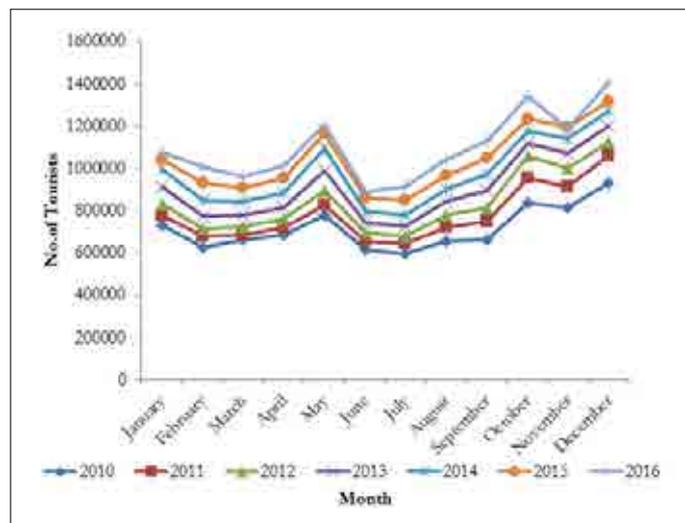
December and the lowest was in the month of June. **Figure 3.2.4** portrays the month-wise arrival of domestic tourists in Kerala from 2010 to 2016.

Source of Domestic Tourism

The statistics on the distribution of domestic tourist visits in Kerala by State of origin during

2016 reveals that about 66.05 per cent originated within the State. With respect to the distribution of other States, Tamil Nadu ranks 1st with a share of 8.23 per cent of domestic tourist visits. Karnataka (5.89 per cent) and Maharashtra (3.72 per cent) were the other important States. **Appendix 3.2.5** gives the details of top 15 State-wise share of domestic tourist arrival in Kerala.

Figure 3.2.4
Month-wise Arrival of Domestic Tourists in Kerala
from 2010 to 2016, in number



Source: Department of Tourism, Government of Kerala

District-wise Arrivals of Domestic Tourists

Regarding the domestic tourist arrivals to Kerala, Ernakulam and Thrissur are the leading districts. Ernakulam is the leading district in attracting tourists and Pathanamthitta attracts the lowest number of tourists. District wise number of domestic tourist arrivals during 2015 and 2016 is given in **Appendix 3.2.6**.

ECONOMIC IMPACT OF TOURISM

The foreign exchange earnings from tourism during the year 2016 was ₹7,749.51 crore and domestic tourist earnings was ₹15,438.64 crore. Total revenue including direct and indirect means was ₹29,658.56 crore showing an increase of 11.12 per cent over 2015. Details are given in **Appendix 3.2.7**. **Figure 3.2.5** portrays total revenue generated from tourism in Kerala from 2007 to 2016.

State and Central Government Plan allocation

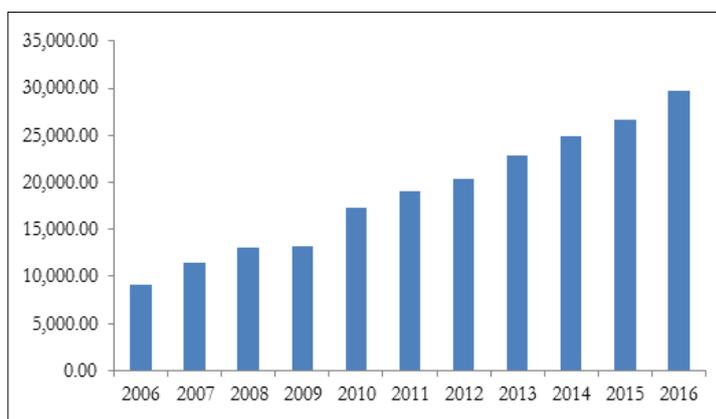
The details of State Plan allocation and Central Finance assistance for Kerala Tourism from 2012-13 to 2016-17 are given in **Table 3.2.2** and **Table 3.2.3** respectively.

RECENT ACCLAIM AND AWARDS

Kerala tourism has received several awards and citations as a result of the concerted efforts of both the public and private sector working together to take Kerala tourism to great heights.

- PATA Gold award for Visit Kerala. Commercial campaign 2016.
- PATA Gold for E-news letter 2016.
- Travel and leisure award honey moon destination 2016.
- Conde-Nast traveller readers travel awards for best leisure destinations 2016.

Figure 3.2.5
Total Revenue generated from Tourism (2007-2016), ₹ in crore



Source: Department of Tourism, GOK.

Table 3.2.2
State Plan allocation 2012-13 to 2016-17, ₹ in crore

Year	Allocation (including SDG)
2012-13	1805.53
2013-14	214.89
2014-15	245.36
2015-16	230.45
2016-17	314.32

Source: Department of Tourism, GOK.

Table 3.2.3
Central Financial Assistance 2012-13 to 2016-17, ₹ in crore

Year	Allocation
2012-13	78.26
2013-14	346.67
2014-15	-
2015-16	99.23
2016-17	194.43

Source: Department of Tourism, GOK.

- Best stand award at WTM 2016 and people's choice award at WTM 2016.
- Lonely Planet Travel Award for best destination for families.
- Lonely Planet Travel award for best destination of Romance: India, Munnar Kerala 2017.
- Better holiday award for India's favorite waterfront destination 2017.
- Outlook traveler award-best destination for wellness and spirituality 2017.
- PATA Gold awards 2017 for best Consumer Travel Brochure - Film Tourism Brochure.
- VTH international Tourism Conclave and Travel awards-best Backwater, Ayurveda and SPA, and wellness state, 2017.
- Kerala, only State from India listed in NAT GEOs around the world in 24 hours 2016.

Cultural Initiatives

Onam: Onam 2016 was celebrated from September 12 to September 18 with a strong people's participation

Nishagandhi festival: In 2016, the festival included food festival, dance festival and Kathakali fest for 7 days during January

UTSAVAM: The Kerala Arts festival for the promotion of local cultural programmes was conducted from February 25th to March 1st 2016 in the selected tourist destinations of 14 districts

Tourism Promotion and Publicity

The Department of Tourism has undertaken various innovative initiatives in the areas of

promotion and publicity. The State tourism department has participated in 12 international trade fairs and 18 workshops in 2016-17.

Sanctioned Projects

During 2016-17, a total number of 223 projects were sanctioned for an amount of ₹212 crore in the State and two centrally sponsored projects were sanctioned for an amount of ₹194 crore in which ₹37 crore has been released by the GOI. The centrally sponsored projects are : (i) Development of Sree Padmanabha, Aranmula Sabarimala as a spiritual circuit in Kerala under Swadesh Darshan for an amount of ₹94 crore and GOI has released ₹18 crore (ii) Development of Sabarimala-Erumeli-Pampa-Sannidhanam as a spiritual circuit in District Pathanamthitta, Kerala under Swadesh Darshan Scheme for an amount of ₹99 crore and ₹19 crore has been released by GOI.

Conclusion

The challenges and issues of the sector such as increasing competition from neighboring states and countries, poor connectivity to the destinations within the State, problems with respect to infrastructure facilities, waste management, safety measures and lack of better connectivity to Kerala from major parts of the domestic and international markets are to be addressed. Concurrent developments in health, sanitation, urban and rural planning, transport, connectivity, local self government and other spheres are required for the development of tourism industry.

Box 3.2.2
Approach for the 13th Five-Year Plan

- Tourism has continuing and promising potential in the State. There is potential in the traditional locations in Kochi, south of Kochi and in the highlands. There is the steady and unabated growth of pilgrimage arrivals, and there is the vast and relatively unexploited tourist potential of the northern parts of the State.
- Tourism development requires technical expertise and all-round planning. It must cater to all sections of tourists, ranging from luxury tourism through lower-income family tourists to backpackers. It must be responsible tourism, and sensitive to carrying capacity and the needs of the State's environment and people. This is a task in which we certainly can succeed.
- The XIII Plan will attempt a new growth strategy for tourism in the State. The major performance indicators are to double the arrival of foreign tourists, increase the arrival of domestic tourists by 50 per cent, and create some 400,000 jobs in the sector over the XIII Plan period.
- Internationally, public spending on tourism generally focuses on tourism promotion in different forms, while infrastructure and “destination development” is mainly the task of local governments. In Kerala, this situation is reversed, with destination development taking up more than 60 per cent of Plan allocation and promotion about 25 per cent. The XIII Plan will partially correct this imbalance, raising the shares of tourism promotion to at least one-third of allocation.
- The State must explore and utilise the full scope of tourism – beachside, historical, heritage, cultural, forest and environmental resources, medical – in Kerala. It will encourage the development of non-traditional tourism destinations and products, thus extending tourism to the entire year rather than confining tourism to a particular season.
- The XIII Plan will allocate resources to developing destinations and diverse activities with potential in this sector, including Biennale, Kerala's multiple festivals in the arts, eco-tourism, sites and events linked to the Spice Route, the relatively unexplored tourist potential of northern Kerala, and so on.
- Kerala needs more youth with the skill-sets required to deliver high-quality services in the tourism sector. This is in order not only to upgrade human resources in the field of tourism in the State, but also to prepare young people for employment in the tourism sector in other parts of India and the rest of the world.
- The campaign to make a Come to Kerala Year successful will require simultaneous efforts in health, public health, sanitation, prevention of litter, solid waste management, purification of water bodies. The organising group must be able to coordinate the efforts of different departments – culture, environment, forest, health, local government, archaeology and museums, and agriculture, for example – to make the effort an all-round success.

3.3 SCIENTIFIC SERVICES AND RESEARCH

Science and technology is an important element of national development. Public investment in science and technology sector in Kerala is aimed at assisting economic development and in balanced and sustainable growth in the State, with a particular focus on the State's resources and needs, generating new and enhanced income and employment opportunities.

The two major institutions in the Science and Technology sector in the State are the Kerala State Council for Science, Technology and Environment (KSCSTE) and the Regional Cancer Centre, Thiruvananthapuram.

1. Kerala State Council for Science, Technology and Environment (KSCSTE)

Kerala State Council for Science, Technology and Environment (KSCSTE) is an autonomous body under the Department of Science and Technology, Government of Kerala. It is governed by the State Council (SC) with the Chief Minister of Kerala as the President and an Executive Council (EC), chaired by the Executive Vice President of KSCSTE. Presently, there are seven full-fledged R&D centres, two emerging research centres and two Grant –in- aid institutions under the umbrella of KSCSTE.

The main objective of KSCSTE is to plan and formulate science, technology and innovation policy pertaining to the development of the State. The schemes and programmes of the Council are aimed at the development of high quality science education system in the State.

The Kerala State Council for Science Technology and Environment also drives the research and

development efforts of the R&D Centres and offers assistance for the creation of physical infrastructure and procurement of scientific infrastructure through the development and selective augmentation of R&D activities. The other initiatives include

- Science popularisation programmes
- Research development programmes
- Ecology and environment related programmes
- Awards and recognition for science promotion
- Technology development and transfer
- School level promotional activities

12th Five-Year Plan

An amount of ₹435.45 crore was the budgeted outlay for the sector during 12th Five-Year Plan and expenditure was ₹311.66 crore. (Table 3.3.1)

Major Physical Achievements during 12th Five-Year Plan

I. R&D Institutions under KSCSTE

- Srinivasa Ramanujan Institute for Basic Sciences (SRIBS) was established in 2013 in Pampadi, Kottayam for capacity building of young faculty members, researchers and post graduate students in contemporary areas of sciences.
- National Transportation Planning and Research Centre(NATPAC) prepared the Comprehensive Mobility Plan for Thiruvananthapuram and Kozhikode.
- Jawaharlal Nehru Tropical Botanic Garden and Research Institute (JNTBGRI) documented and published the complete plant wealth of the Western Ghats.
- Centre for Water Resources Development and Management (CWRDM) prepared integrated river basin management plan for Chaliyar basin,

Table 3.3.1
Outlay and Expenditure in 12th Five-Year Plan and Annual Plan 2017-18,
₹ in crore

Sl. No.	Name of Scheme	12th Five-Year Plan 2012-17		Annual Plan 2017-18	
		Outlay	Expenditure	Outlay	Exp (as on 30/9/17)
1	R&D institutions under Kerala State Council for Science, Technology and Environment	240.20	100.90	63.58	0
2	Infrastructure strengthening of Kerala State Council for Science, Technology and Environment	9.55	2.24	2.26	.37
3	Schemes and Programmes of Kerala State Council for Science, Technology and Environment	116.93	25.42	31.08	7.14
4	Grant in aid support to Science and Technology Institutions	9.90	53.99	1.90	0
5	Biotechnology Development	11.50	6.46	3.05	.66
6	Special Programmes of KSCSTE	13.85	1.23	4.20	.27
7	Karamana River Scientific Management Project	29.00	12.83	3.00	0
8	Other Schemes	4.52	108.59		
	Total	435.45	11.66	109.07	8.44

Source: Annual Plan Documents, Kerala State Planning Board

Wetland Atlas of Kerala along with CESS and KFRI, introduced and distributed Drinking Water Card in selected Panchayats of the State and established a Water Heritage Museum.

- KFRI is one of the organisation, identified by Government of India, for imparting training to the officers of the Indian Forest Service. Major achievement of this institution was bio resource quantification of the State using remote sensing.

- Initiated Karamana River Scientific Management Project.
- Initiated Dr. APJ Abdul Kalam Youth Challenge Programme for taking up challenges in specialised sectors.
- Launched Varghese Kurian Young Scientist Fellowship.

Review of Major Schemes 2016-17

II. Schemes/Programmes of KSCSTE

- Critical Mineral Research Institute (CMRI), a new initiative, started with the broad objective of conducting high end R and D in the area of beach minerals for value addition and thereby enhancing the industrial technology innovations in this area.
- Centre for Assistive technologies for visually impaired started a centre in Farooq College, Kozhikode.

A. Major Arms of KSCSTE for Scientific Research

There are seven research and development centres under the umbrella of the Council which conducts research and development activities in specific mandated domains. Budgeted outlay for these institutions for 2016-17 was ₹56.50 crore and ₹43.38 crore has been incurred in the year.

Kerala Forest Research Institute (KFRI)

The Kerala Forest Research Institute is envisioned as a Centre of Excellence in Tropical Forestry to provide scientific support for decision making on matters related to forestry, with particular emphasis on conservation, sustainable utilization and scientific management of natural resources. Working in collaboration with the Forest department and other stakeholders, the institute continues to play a key role in improving the science foundation of forest management

Major Achievements

Extension Projects

- The Bamboo Primary Processing Centre (BPPC) was set up under the Bamboo Technical Support Group with the support of the National Bamboo Mission (NMB).
- More than 3,50,000 Quality Planting materials of various timber trees, medicinal plants, habitat specific species, RET plants, wild fruits, indigenous avenue plants etc were developed and supplied to various government departments, farmer clusters, planters and general public.
- Twenty four rare and threatened native orchids and ferns were collected.

The Central Instrumentation Unit of KFRI received approximately 1,000 queries for analysis and it could analyse 859 samples. The unit generated an income of 2.7 lakh in 2016-17, which is 59 per cent higher than that of 2015-16.

- 95 accessions of medicinal plants were collected as part of enrichment of the existing germplasm.
- 44 plant species were collected through Kerala Forest Seed Centre. The centre also collected 32,258.46 kg seeds, processed 893.30 kg seeds, which were sold for ₹4.22 lakh.

Research Projects

- A database of forestry literature developed under the project titled 'An Information System for Forest of Kerala'. This database consists of 6200 records which include

scanned books, reports, and journal articles, working plans, management plans and thesis. Scanned materials are processed and metadata is provided for each record.

- Bibliographical citations of 9,600 articles related to Indian Forestry is covered.
- Digitization of 5 periodicals are completed.
- Developed a digital library for the Teak Museum. Updated the database developed in 2004 by adding 1,200 records.
- Fungal Disease survey has been carried out in central nurseries of Kerala.
- Mangrove sites in Kerala compiled from published literature and ground truthing done and also completed plot establishment. Mangrove species in these plots were identified and recorded.

National Transportation Planning and Research Centre (NATPAC)

National Transportation Planning and Research Centre (NATPAC) is undertaking research and consultancy works in the fields of traffic engineering and transportation planning, highway engineering, public transport system, alternate options for transport system, transport energy, inland water transport, tourism planning and rural roads. The activities of NATPAC range from surveying to preparation of techno economic studies, feasibility analysis, detailed project reports for infrastructure development projects involving multi-modal system of transportation covering road, rail, water, ports/harbours and airports.

Major Achievements

- In 2016-17, NATPAC has carried out 28 Research Projects, 19 externally funded projects and 13 road safety programmes.
- A comprehensive Mobility Plan for Thrissur district was prepared.
- Prepared GIS-based road and traffic database for the roads in the State.
- Air Pollution Index of the State was developed.
- Developed a perspective plan for National

- Highway sections in Kozhikode division on a demonstration mode.
- A growth rate model for National Highways in Kerala has been developed.
 - Formulated practicable accident prediction models which would describe the expected number of accidents at road links in urban areas.
 - Developed a methodology to identify and prioritise hazardous locations and to find out the most vulnerable accident stretch using accident data for the past three years.
 - About 100 road safety projects/programmes pertaining to schools, panchayats, drivers and other road users were completed reaching a target more than 3000 road users.
 - Studies were done on accidents and other safety related aspects of the inland water ways of the State and prepared a GIS based database management system to compile, store and analyse water related data.

Centre for Water Resources Development and Management (CWRDM)

CWRDM is a premier R and D institution in the water sector under KSCSTE. The Centre provides research inputs for water resources development and management, especially in the humid tropics and has expertise in tackling different problems pertaining to watershed development, wetland management, water management for agriculture, forest and urban hydrology, estuarine management, groundwater development, water quality management, water related environmental issues and irrigation and drainage issues. Presently, CWRDM has 9 scientific divisions and 3 sub-centres.

Major Achievements

- CWRDM has prepared Water Security Plan for 13 Grama Panchayats for Jananidhi Project-Phase II in Malappuram, Kozhikode and Kasaragod Districts.
- Prepared Hydrological Information System for the River Basins in Kerala.

- Water quality testing and issuance of Water Card is being done routinely based on request from Panchayats/Municipalities/Corporations/other public bodies.
- Assessed Water, Sanitation and Hygiene (WASH) facilities in Attappady block under UNICEF Project.
- Coordinated the preparation of District Irrigation Plans for Palakkad and Idukki districts under Pradhan Mantri Krishi Sinchai Yojana (PMKSY).
- Developed Irrigation Schedule for Coconut and Pepper for different agro-ecological zones.
- Management Action plans of Kavvayi and Kattampalli Wetlands were prepared.
- Prepared preliminary investigation report for Mitigation Measures for Flood Abatement in upper Kuttanad.
- CWRDM have taken proactive initiatives to combat the ill effects of drought during 2016-17 along with adaptation strategies.
- The centre has carried out a total of 67 research and consultancy projects in 2016-17. 16 projects have been completed out of which 12 are from external funded agencies.
- During the reporting period, CWRDM has published 29 papers in refereed journals, 6 books were published and 44 papers in Conferences.

Jawaharlal Nehru Tropical Botanic Garden and Research Institute (JNTBGRI)

Jawaharlal Nehru Tropical Botanic Garden and Research Institute (JNTBGRI) undertakes research programmes for the sustainable utilization of these resources. The institute is currently conserving more than 4,000 species of flowering plants and about 300 species of non-flowering angiosperms, which is the highest number of plant species conserved among the botanic gardens in Asia. The institute has an extension centre viz., Saraswathy Thangavelu Centre at Puthenthope, Thiruvananthapuram where the Bioinformatics Centre is established. The Government of India

has recognized the JNTBGRI as a National Centre of Excellence.

- Ethnomedical survey and systematic documentation of Traditional Knowledge among 13 tribal communities in 17 Grama Panchayaths of 3 districts of Kerala State were completed.
- Ethnobotanical survey in the coastal areas of three southern districts of Kerala has been completed, based on which 3,069 information were documented including food plants (422), medicine (2117), fodder (132), fishing tools & implements (281), fuel (117) etc.
- Phytochemical investigation of oils and fats from endemic plants of the Western Ghats
- An integrated R and D centre of JNTBGRI, for promoting green industry is being established at Kuzhoor, Panchayath, Kodungallur, Thrissur District, with the financial support of Kerala State Industrial Development Corporation (KSIDC), GOK.
- Published 43 research papers and 3 books.

Kerala School of Mathematics (KSoM)

Kerala School of Mathematics (KSoM) was established in 2009 as a joint venture between KSCSTE, Government of Kerala and Department of Atomic Energy (DAE), Government of India for carrying out advanced learning and research in Mathematics.

- The institution had published 4 research papers during the reporting period.
- Conducted one outreach programme and organised 12 training programmes/workshops.

Srinivasa Ramanujan Institute for Basic Sciences (SRIBS)

Srinivasa Ramanujan Institute for Basic Sciences (SRIBS) is a capacity building institute envisaged for research, teaching and learning in Basic Sciences. The main objective of the institute is to formulate and implement programmes for capacity

building of young faculty members, researchers and post graduate students in contemporary areas of sciences.

The institute has organized colloquia, seminars, workshops benefitting students, teachers and researchers in various areas of science. 6 academic programmes were conducted during 2016.

Malabar Botanical Garden and Institute of Plant Sciences (MBGIPS)

The Malabar Botanical Garden and Institute for Plant Sciences (MBGIPS) is an institution of KSCSTE dedicated to the conservation and research on aquatic plant diversity, lower group plants, endangered plants of the erstwhile Malabar Region, as well as disseminating knowledge on various facets of plant sciences.

Major Achievements

- The United Nations University –Institute for Advanced Studies (UNU-IAS), the academic and research arm of the UN, recognised MBGIPS as the Regional Centre of Experts (RCE) in sustainable education.
- Bio-fortification garden, a new section demonstrating the vitamin sources in plants was developed.
- Exiting palm garden renovated to palm park.
- A new section has been started incorporating the spices of Malabar region.
- 24 Gen-bank submissions of oil degrading bacteria and algae.
- Established micro-propagation and reintroduction of 5 RET plants.
- As part of the Harithakeralam programme, MBGIPS and Kozhikode block panchayat in association with Forest Department raised 50,000 seedlings of forest trees and fruit crops in 33 beds which were distributed to the general public.
- 500 specimens have processed and deposited in the MBGIPS herbarium.
- 8 R&D projects were sanctioned.

- Total number of publications during the reporting period is 4.

Academic Achievements of R and D Institutions

Research Publications – The research and development institutions of KSCSTE have been creating the wealth of knowledge in diverse fields. The institutes have produced a good number of publications in refereed journals, published books and chapters in books and research papers in national and international conferences. The number of research papers produced by R&D institutions from 2012 onwards is portrayed in **Figure 3.3.1**.

Among the seven R and D institutions under the Council, JNTBGRI and CWRDM rank top with respect to the publication of papers in 2016-17.

With respect to the publication of books during 2016-17, JNTBGRI published 3 books and CWRDM published 6 books during the period. CWRDM presented 44 papers in international/national/regional conferences.

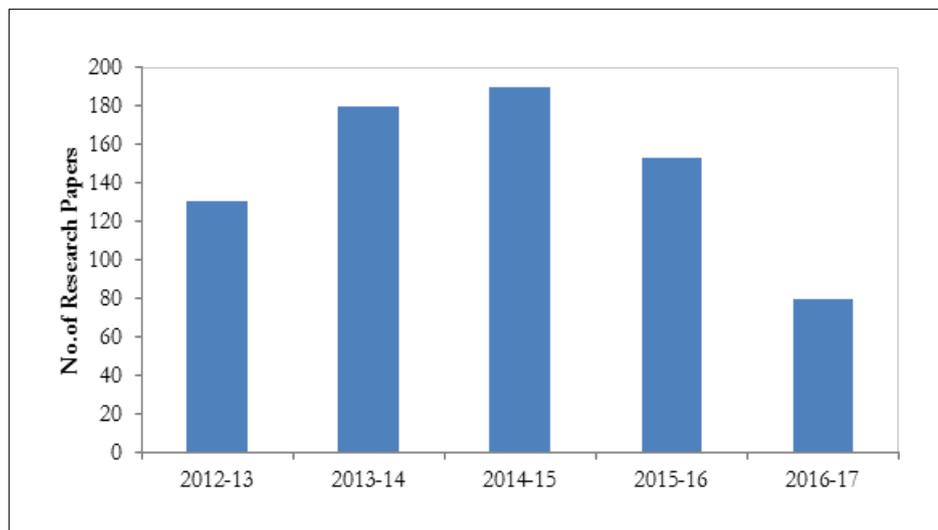
Manpower Training

Ensuring sustainable availability of talented youth for science is a challenge. The role of R and D institutions in rearing up research aptitude and talent has foremost importance in orienting the youth to science, technology, innovations and S and T-based solutions that successfully lead an economy or a State. The R and D institutions of KSCSTE have produced 8 PhDs in 2016. The institutes have trained 488 people in research capacities and 170 in technical capacities. **Table 3.3.2** provides the performance of the R and D institutions collectively in providing quality manpower, and producing output in terms of patents and technology transferred.

B. Achievements of Other Schemes and programmes of KSCSTE

An amount of ₹43.29 crore was provided in 2016-17 for implementing the schemes and programmes of KSCSTE and expenditure incurred was ₹32.08 crore.

Figure 3.3.1
Research Papers Produced by R&D Institutions from 2012 -13 to 2016-17



Source: KSCSTE, Sasthrabhavan, Thiruvananthapuram.

Table 3.3.2
Overall Performance of R&D Institutions

R and D Centre	2012	2013	2014	2015	2016
Ph D Produced	12	10	11	12	8
Research Manpower Trained (other than Ph D)	171	1017	703	534	1086
Technical Manpower Trained	146	283	473	243	488
Patent Filed	1	1	Nil	1	1
Technology Transferred					3

Source: KSCSTE, Sasthrabhanan, Thiruvananthapuram

Science Research Scheme (SRS)

It is one of the flagship activities of the Council operating under the Science and Technology Promotion Division (STDP) of the Council. SRS aims towards the promotion of R and D activities in the State both in fundamental and applied research. Under the scheme, research projects in emerging areas of science and engineering are supported by providing financial assistance for implementation. Research projects are supported in University departments, colleges and R and D institutions. A total of 99 projects were granted under this programme in 2016-17. Also, 7 patents filed, 162 papers were published in refereed journals from the supported projects and 40 PhDs were awarded under SRS.

KSCSTE Emeritus Scientist Scheme

The objective of the scheme is to tap knowledge and to provide support to superannuated outstanding scientists to pursue research in their respective field of specialisation and to utilise their talent and experience in addressing State level important issues. During 2016-17, 9 scientists were given Emeritus awards, 11 Ph.Ds were awarded and 54 papers were published from supported projects.

Student Project

Under this project financial support is given to the students of University Departments and Colleges in the State to conduct scientific projects

and in 2016-17, a total number of 424 project proposals were received and 204 among them were recommended for financial assistance.

Scheme for Promotion of Young Talents in Science (SPYTis)

The programme is for giving awards for the students of Class VIII-IX for doing a science project (SPYT is I) and for giving financial assistance to those students who have innovative ideas in science and technology and enrolled in polytechnic colleges and undergraduate courses in colleges for conducting projects. During the year 2016-17, financial assistance was sanctioned to 132 projects.

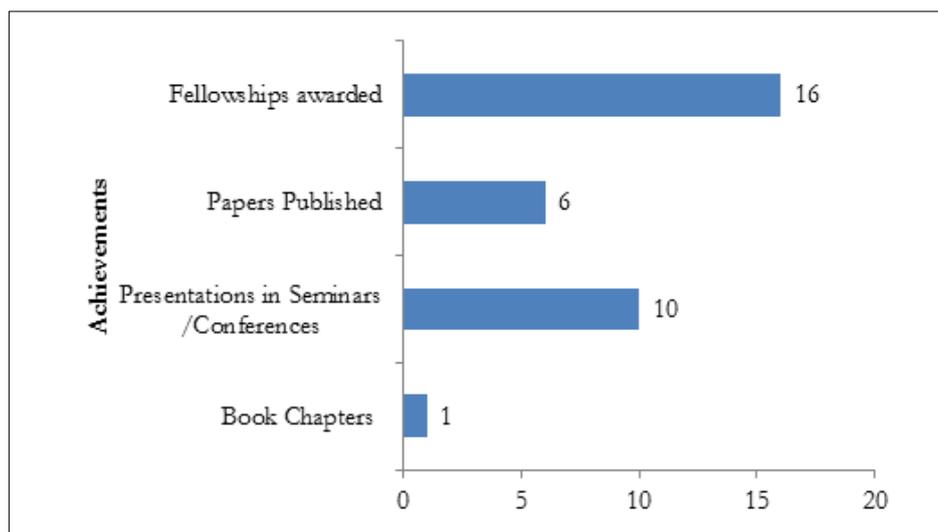
KSCSTE Research Fellowships

Out of the 454 applications received 50 were sanctioned for KSCSTE research fellowships. KSCSTE has introduced 4 special post doctoral fellowships in 2016. 15 Post-Doctoral fellowships and 1 Special Post-Doctoral fellowship was awarded during 2016-17. **Figure 3.3.2** shows the achievements of KSCSTE research fellows during 2016-17.

Programmes for infrastructure development in S and T

In order to provide sufficient infrastructure facilities in Universities, colleges and schools for the promotion of scientific activities and augmenting research, the Council has been providing financial

Figure 3.3.2
Achievements of KSCSTE Research Fellows in 2016-17



Source: KSCSTE, Sasthrabhavan, Thiruvananthapuram.

assistance for the creation of lab and related facilities over there. Selective Augmentation of Research and Development (SARD) and Sastraposhini are the two schemes implemented by the Council for this purpose. SARD is envisaged to create facilities in colleges and Universities for augmenting research in specified areas. Under this programme, grants will be paid for strengthening the laboratory infrastructure by procuring equipments and also for its maintenance. So far, 57 science Post Graduate laboratories and research institutions in the State have been augmented. Sastraposhini scheme aims to establish model science laboratories in Physics, Chemistry and Biology to create a better ambience in high schools. Since the very inception of the scheme, 179 schools in Government and aided sector in the State have been supported to establish good science laboratories. During 2016-17, five Government high schools were selected for implementing this scheme.

Engineering and Technology Programmes (ETP)

The Engineering and Technology Programme (ETP) intends to encourage and promote research talents for the implementation of high quality research projects in the emerging areas

of Engineering and Technology. The scheme is instituted for the faculty of engineering colleges and scientists of R&D institutions in the State. During the year 2016-17, an amount of ₹137.84 lakh was released for the programme and 7 proposals were approved under the programme. **Figure 3.3.3** represents the number of proposals received and approved under ETP from 2012-13 to 2016-17.

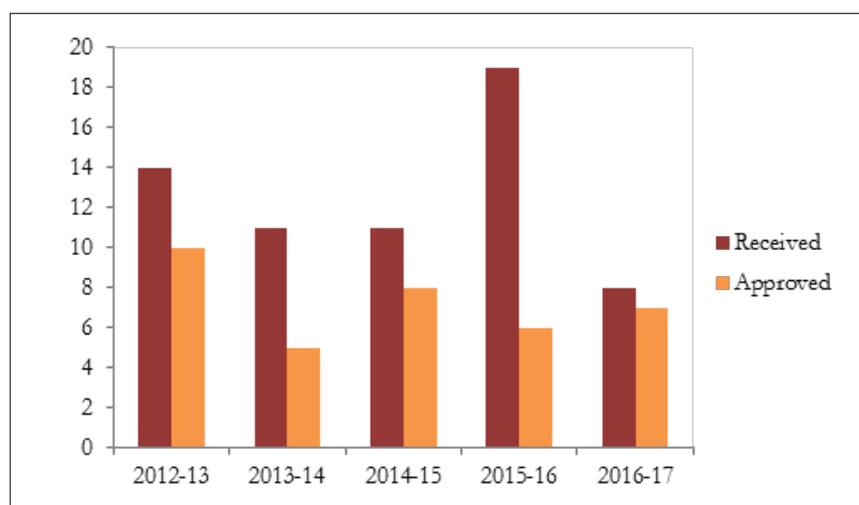
Technology Development and Adaptation Programme (TDAP)

The very objective of the programme is to provide catalytic support for the development and demonstration of innovative and need-based technologies and to raise such technologies to the level of commercialisation. During 2016-17, eighteen proposals were received of which 11 are sanctioned. Financial support provided was ₹19.4 lakh.

Rural Technology Programme (RTP)

RTP scheme is instituted for the purpose of providing assistance in the form of grants to promote and support the traditional rural technology and upgrade them, so that it could be

Figure 3.3.3
Number of Proposals Received and Approved under ETP
from 2012-13 to 2016-17



Source: KSCSTE, Sasthrabhavan, Thiruvananthapuram

perfected for wider applications and employment generations and to reduce the drudgery of the rural households. The main objectives of this scheme are to encourage and promote grassroots innovators and individuals to support them so as to perfect their innovative ideas in rural technology sector and provide technical support to raise their innovations to an enterprise level. During 2016-17, 13 proposals were received and 5 were approved. ₹19.4 lakh has been provided as financial support for the programme.

Patent Information Centre – Kerala (PIC-Kerala)

KSCSTE with the support of Dept. of Science and Technology, Govt. of India established Patent Information Centre – Kerala (PIC-Kerala) in the year 2003 to provide Intellectual Property

Rights (IPR) related services to the people in the State. PIC-Kerala has been implementing many programmes to promote and propagate IPR in the State through awareness campaigns and publications. The Centre has been guiding the inventors in protecting their intellectual properties and facilitating access to patent related documents. The ultimate objective of PIC-Kerala is to increase the IP output of the State. **Table 3.3.3** gives the number of filed patent applications.

PROGRAMMES FOR WOMEN IN SCIENCE

In Kerala, though the State has the highest women literates, their representation in science research is very low. In order to provide a support system to attract and retain women and girls in science and take up science as a career, the Women Scientists

Table 3.3.3
Number of filed patent applications processed

Year	No. of Patent Applications Processed
2012-13	87
2013-14	89
2014-15	59
2015-16	60
2016-17	105

Source: KSCSTE, Sasthrabhavan, Thiruvananthapuram

Division at KSCSTE initiated several schemes and programmes to increase their participation in Science, Technology, Engineering, Agriculture and Medicine (STEAM). The important programmes carried out by the Council in this area are

Women in Science

I. Back to Lab Research Fellowship Programme

– 14 projects were sanctioned under the programme, 1 patent application filed, 48 international/national journals published and 6 scholars have completed Ph.D.

II. Awareness Programme on “Technological advances in transforming women’s lives”-3 programmes were sanctioned under the project.

III. Project on Preparation of database of “Women in Science in Kerala” – 506 registrations were made in the online directory which is developed for obtaining base-line data on the status of women in various sectors of Science in the State.

STARS (Students with Talent and Aptitude for Research in Science)

I. Pratibha Scholarship Scheme – 200 students were selected for the scholarship.

II. SPEED (Student Programme for Excellence in Experimental Design)- The

number of sanctioned programme in 2016-17 is 1.

Government Spending on Scientific Services and Research

Recognising the growing need of investments and related expenditure for expansion of the scientific services and research in the State, the government has been allocating funds from the Fifth Five-Year Plan period onwards. During the Fifth Five-Year Plan period (1974-78) the allocation was ₹7.98 crore which increased to 435.45 crore by the 12th Plan period (2012-17). **Table 3.3.4** details the Plan outlay and expenditure from 2012-13 to 2016-17.

Regional Cancer Centre, Thiruvananthapuram

Globally, common challenges to cancer control are delays in cancer diagnosis and inaccessible treatment. Deaths from cancer worldwide are projected to continue to rise to over 13.1 million in 2030. As per the report of the Indian Council of Medical Research, India is likely to have over 17.3 lakh new cases of cancer and over 8.8 lakh deaths due to the disease by 2020 with cancers of breast, lung and cervix topping the list.

Regional Cancer Centre with headquarters at Thiruvananthapuram is one of the top rated comprehensive cancer centres in the country offering diagnostic and treatment facilities

Table 3.3.4
Plan Outlay and Expenditure from 2012 to 2017 (₹ in crore)

Year	Outlay	Expenditure
2012-13	66.20	63.96
2013-14	78.95	51.36
2014-15	91.71	54.64
2015-16	99.79	66.24
2016-17	99.79	75.47

Source: Annual Plan Documents, State Planning Board, Thiruvananthapuram

Box 3.3.1
Approach to 13th Five Year Plan

- Total science and technology (S&T) expenditure by the Government of India dwarfs the expenditure by State Governments, and over the decade of the 2000s the expenditure by all States on S&T fell from approximately 18 per cent to 16 per cent of total national S&T expenditure. Nevertheless, State-level expenditure on S&T is essential in order to design programmes of research and innovation that are fine-tuned to the needs and potential of the State. State-level S&T investment must improve the capacity of the State Government to attract investment, develop local resources, and facilitate innovation.
- Kerala's Plan expenditure in various Plans under the head of Science, Technology, and Environment, has been significant compared to other States. A network of institutions has been developed. An apex agency, the Kerala State Council for Science, Technology and Environment (KCSTE), which coordinates and directs S&T activity through these institutions and also supports a variety of other activities, including science popularisation, has been established. The scope of these activities is evidence of an all-round approach to the development of the S&T in the State. It is recommended that the major focus remain on scientific research carried out in research institutions, University centres, and College departments recognised as research centres. State efforts should complement rather than substitute Central support for S&T.
- As the work of the research institutions progresses, it will be necessary to strengthen an appropriate system of regular reviews and quality output in keeping with national and global best practices. Periodic review of existing projects and suitable screening for continued funding is also necessary. New departments or organisations for research are best located within higher education or other existing research institutions, in order to gain advantages of scale. An adequate system of peer review, project evaluation, and timely delivery must also be ensured for research projects, research grants, and fellowships granted by the KCSTE.
- Kerala's S&T profile is also enhanced by the significant number of centrally-funded institutions in the State. These are a valuable resource that can augment the capacities of State-level S&T institutions, and development in general.
- Strength of regions that are global leaders in S&T is the industry-academia-government link that drives the growth of S&T-based value-addition in the industrial sector and the close connection between research institutes and the university sector. The Government will promote coordination and collaboration between research institutes and the higher education system.
- A diverse and inclusive human resource base is of much value for S&T. The Government supports all efforts to improve women's participation and participation by persons from the Scheduled Castes and Tribes in the S&T sector.

for cancer. Its main objective is to undertake basic, applied and statistical research in various specialities of oncology.

It undertakes basic, translational and clinical research and disseminates knowledge. The centre carries out innovative and pioneering work in cancer control, treatment, research and training. It is rated amongst the top three of the 28 Regional Cancer Centres in the country and maintains a working relationship with international bodies such as the WHO, International Agency for Research on Cancer (France), International Atomic Energy Agency (Vienna), National Cancer Institute (USA), Institute for Cancer Research (UK), University of Leeds (UK), Health Research Foundation (Japan) and a host of other respected organizations.

Over the past thirty six years, RCC has been able to contribute significantly to the increasing needs of cancer care of the people of the State of Kerala and adjoining areas of Tamil Nadu and Karnataka providing state-of-the-art diagnostic and treatment facilities at the lowest possible cost. In addition, RCC is committed to cancer control activities among the public, human resource generation in the various specialities of oncology

as well as cancer research expected to result in new treatments for cancer.

12th Five-Year Plan

During the 12th Five-Year Plan period, ₹229.43 crore has been provided as outlay for Regional Cancer Centre and expenditure was ₹106.71 crore (47 per cent).

Major Physical Achievement during 12th Five-Year Plan

Expansion of Physical Infrastructure

- Constructed a new 10 storey building to accommodate the increase in patients. The building accommodates all Outpatient Departments, Nuclear Medicine Division, Chemotherapy wards, Medical Records, Academic Offices, Cancer Epidemiology, Administrative Offices etc.
- Purchase of PET-CT Scanner, SPECT Gamma Camera, 4D CT Scanner and High-end USS machine, setting up of Digital Radiography, Portable Xray Dexa Scanner,

Box 3.3.2

2017 WHO Cancer Resolution

2017 WHO Cancer Resolution: Cancer prevention and control in the context of an integrated approach

World Health Organisation in its World Health Assembly held on 30 May 2017, adopted a draft resolution on Cancer prevention and control in the context of an integrated approach and proposed that such an approach to cancer prevention and control is required if governments are to achieve related Sustainable Development Goal targets by 2030, namely target 3.4 to reduce premature mortality from non communicable diseases (NCDs), including cancer, by one third and target 3.8 to achieve universal health coverage. The resolution lays out a clear road map for stakeholders to realize the potential for prevention, early diagnosis, prompt treatment and palliative care for people with cancer. The resolution also calls for the development of a global report on cancer containing evidence-informed guidance for scaling up cancer prevention and control.

Source: World Health Organisation

Table 3.3.5
12th Five-Year Plan (2012-17) Year-wise Outlay
(₹ in crore)

Year	Outlay	Expenditure	Expenditure(per cent)
2012-13	34.00	34.00	100
2013-14	42.17	42.17	100
2014-15	40.40	20.00	50
2015-16	53.50	00	00
2016-17	59.36	10.54	18
Total	229.43	106.71	47

Source: Annual Plan Documents, State Planning Board, Thiruvananthapuram

Endoscopy systems, Molecular Genetic Facility and Upgradation of Telemedicine facility.

Research and Training

- Basic, Epidemiological, Translational, Clinical and Integrated research with other systems of medicine - 155 ongoing research programmes and 30 ongoing doctoral research programmes.
- Over 1700 articles (80 per cent in indexed peer reviewed journals) and 600 chapters in books/ conference papers.
- 489 articles and 139 chapters in books in the last 5 years.
- 79 PhDs (23 in the last 5 years).

Welfare Programmes

- RCC has implemented several schemes for providing economic assistance, free food, free drugs and various rehabilitation facilities for patients and their families through governmental and non-governmental support programmes. Both the Central and State Governments have initiated several generous schemes to ensure free or subsidized treatment for patients. These schemes include Sukrutham, Cancer Suraksha Scheme, Chis Plus, Karunya Benevolent Fund, Thalolam, Scheduled Tribe Patient Fund, Snehasanthwanam for Endosulfan

Victims, Prime Minister's Relief Fund, Health Minister's Rashtriya Arogya Nidhi (RAN) and Health Minister's Discretionary Fund.

- Started 'Institute of nuclear medicine' and "Centre for Holistic Medicine" in Regional Cancer Centre (RCC).
- Cancer Care for Life (CCL) Scheme – This is a health insurance scheme for cancer treatment. Considering the large response from the public, the RCC has been modifying the scheme.
- Other initiatives like free drug bank, free food ("Akshayapathram") to poor patients.
- "Kingingicheppu" – free food and treatment to poor paediatric patients through voluntary contributions.

Upgradation of RCC as State Cancer Institute

- Under the National Programme for Prevention and Control of Cancer, Diabetes, Cardio Vascular Diseases and Stroke (NPCDCS), the Union Government had approved a project costing 120 crore for upgradation of RCC as State Cancer Institute on cost sharing mode of 60:40 between Government of India and Government of Kerala. An amount of ₹46.95 crore has been released as central share as first instalment of the scheme in 2016-17. The State Government provided ₹31.31 crore in 2016-17 and ₹10.56 crore in 2017-18 as State share

Review of Activities by RCC in 2016-17

Table 3.3.6 provides the profile of the RCC in 2016-17.

The number of new cases registered in RCC from 2012-13 to 2016-17 is shown in **Table 3.3.7**. **Figure 3.3.4** gives the incidence of cancer to human body parts detailed as percentage of new patients registered in speciality clinics in 2016-17 periods.

The highest percentage of new cancer cases registered were respect to Chest and Gastrointestinal cancers during the reporting period and followed by Gynaec, Genitourinary and Breast and Head and Neck cancers.

Table 3.8.8 provides number of new and review Patients undergone treatment in speciality clinics in the year 2016-17.

The details of age and sex wise number of new cases registered reveals that people in the middle

Table 3.3.6
Profile of RCC in 2016-17 at a Glance

New Cases Registered	16255
Review Cases Registered	234271
In-patient Admissions	11416
Radiotherapy	7141
Brachytherapy	1482
Surgical Procedures	6539
Endoscopic Procedures	2045
Chemotherapy Administered	10572
Bone Marrow Transplantations	41
Cancer Detection Programmes	423
Cancer Education Programmes	280
Ongoing Research Projects	155

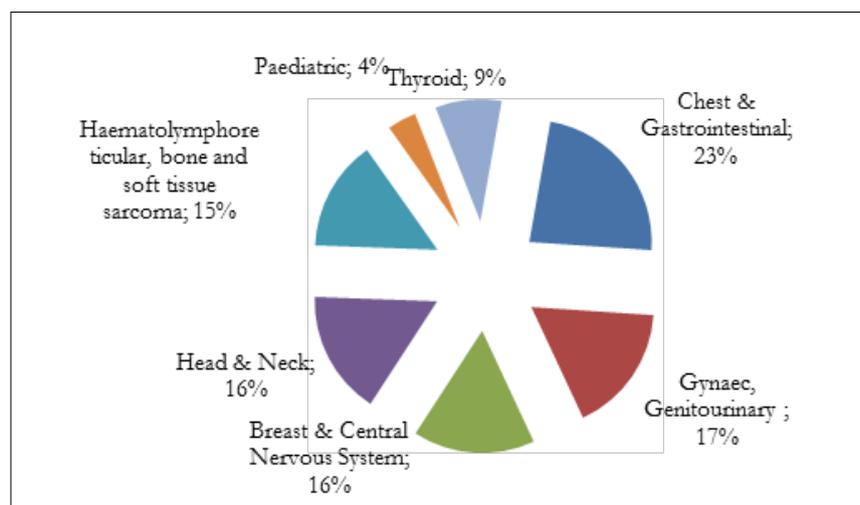
Source: Regional Cancer Centre, Thiruvananthapuram

Table 3.3.7
Number of New Cases Registered in RCC during the last 5 years (2012-13 to 2016-17)

Year	No. of new cases registered
2012-13	14958
2013-14	14903
2014-15	15999
2015-16	16042
2016-17	16255
Total	78157

Source: Regional Cancer Centre, Thiruvananthapuram.

Figure 3.3.4
Speciality Clinic-wise Number of New Patients Registered in 2016-17



Source: Regional Cancer Centre, Thiruvananthapuram

ages are more prone to cancer diseases. About 28.8 per cent of male in the age group 55-64 are affected by cancer whereas the age group in the case of women is slightly lower than this i.e. 24.5 per cent. Female are affected by cancer during the years 45-54 (25.1 per cent). **Figure 3.3.5** illustrates age and sex-wise new cancer patients registered for treatment in RCC in 2016-17.

System-wise (per cent) Distribution of Cancer Patients, by Gender

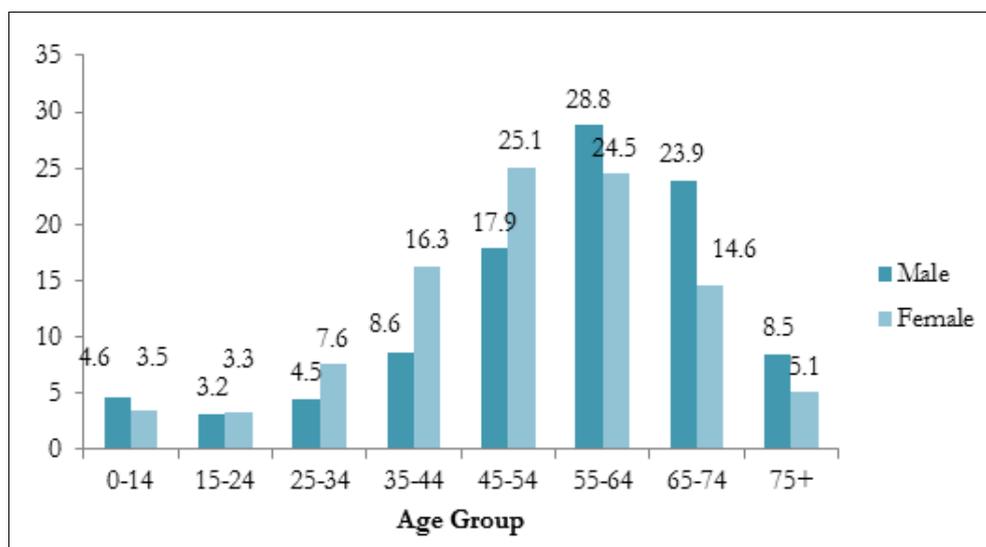
Table 3.3.9 depicts the number of new cases registered in different speciality clinics and **Table 3.3.10** depicts the system wise percentage distribution of cancer patients by gender. Irrespective of the gender disparity in certain

Table 3.3.8
Speciality clinic wise number of Patients (New and Review) undergone treatment 2016-17

Clinic	New	Review	Total
Chest and Gastrointestinal	3782	35009	38791
Gynaec, Genitourinary	2764	33259	36023
Breast and Central Nervous System	2621	48567	51188
Head and Neck	2668	33773	36441
Haematolymphoreticular, bone and soft tissue sarcoma	2378	45996	48374
Paediatric	620	21924	22544
Thyroid	1422	15843	17265
Total	16255	234371	250626

Source: Regional Cancer Centre, Thiruvananthapuram.

Figure 3.3.5
Age- and Sex-wise New Cases Registered in 2016-17



Source: Regional Cancer Centre, Thiruvananthapuram

type of cancers, the incidence of oral cavity and pharynx cancer, cancers to respiratory system etc. mostly affects men than women.

The site wise distribution of patient registration by gender HBCR, RCC, Thiruvananthapuram in 2016-17 is given in **Table 3.3.11**.

Out of the total 16,255 cases registered in 2016-17, invasive cancer patients were 14,501 and 1,754 were non invasive cancer cases.

Referral System

RCC is a tertiary level referral hospital and patients were referred from other government and private hospitals. A total number of 16,255 cases were referred to RCC during 2016-17. Most of the cases were referred from Thiruvananthapuram district (3757 cases), followed by Kollam(2,782), Malappuram(1,112), Palakkad(1,037) and Alappuzha (933). In addition to this, 1908 cases were referred from Tamil Nadu, 29 from

Table 3.3.9
Number of New Cases Registered in Different Speciality Clinics (Gender-wise)

Clinic	Male	Female
Chest and Gastrointestinal	2698	1084
Gynaec, Genitourinary	986	1778
Breast and Central Nervous System	224	2397
Head and Neck	2016	652
Haematolymphoreticular, bone and soft tissue sarcoma	1419	959
Paediatric	348	272
Thyroid	266	1156
Total	7957	8298

Source: Regional Cancer Centre, Thiruvananthapuram.

Table 3.3.10
New Cases Registered in Different Speciality Clinics (Gender-wise), in per cent

System	Male	Female
Brain and Nervous System	2.4	1.9
Oral Cavity and Pharynx	19.5	6.8
Thyroid	3.9	15.6
Respiratory System	19.5	3.6
Breast	0.5	28.3
Oesophagus and Stomach	8.1	3.3
Other Digestive Organs	13.1	6.8
Urinary Tract	3.7	1.1
Reproductive System	5.9	17.2
Bone, Conn. tissue and Skin	4.1	2.7
Leukaemia and Myeloma	9.4	7.2
Lymphoma	7.4	3.6
All Others	2.8	1.9

Source: Regional Cancer Centre, Thiruvananthapuram.

Table 3.3.11
Site-wise Distribution of Patient Registration by Gender
HBCR, RCC, Thiruvananthapuram (2016-17)

Site	Male		Female		Total	
	No	per cent	No	per cent	No	per cent
Invasive cancers	7172	90.2	7329	88	14501	89.2
Non-invasive (in-situ, borderline, benign, non-neoplastic, suspicious etc_	785	9.8	969	12	1754	10.8
Total Registered	7957	100	8298	100	16255	100

Source: Regional Cancer Centre, Thiruvananthapuram.

Karnataka, 15 from Lakshadweep and 56 from other Indian States. 178 persons from Maldives and 16 from Middle East were also referred.

Central and State Government Schemes

Both Central and State Governments have initiated various generous schemes to ensure free or subsidised treatment for patients. Details are given below:

Major Initiatives of RCC in 2016-17

In addition to the Government supported schemes RCC provides support to patients and families through various other schemes as detailed below:

- 1. Cancer Care for Life (CCL) Scheme** – This is a health insurance scheme for cancer treatment. During the year 2016-17, 179 patients reported for treatment under the scheme.

Table 3.3.12
Central and State Government Schemes (2016-17)

Sl. No	Scheme	Patients enrolled (new cases)	Total no. of people benefited	Amount spent(in lakh)
1	Prime Minister's Relief Fund	204	953	180.49
2	Health Minister's Rashtriya Arogya Nidhi (RAN)	505	2053	263.73
3	Health Minister's Discretionary Fund		15	.42
4	Indian Cancer Society	26	202	35.37
State Government Schemes				
5	Cancer Suraksha Scheme	541	4390	602.68
6	Chis Plus	5232	27210	1416.25
7	Karunya Benevolent Fund	4179	17349	2929.58
8	Sukrutham	2585	6043	1654.61
9	Thalolam	13	83	4.74
10	Scheduled Tribe Patient Fund	24	305	24.11
11	Snehasanthwanam for Endosulfan Victims	3	37	4.22
Total		13312	58640	7116.2

Source: Regional Cancer Centre, Thiruvananthapuram.

- 2. Free Drug Bank** – The Free Drug Bank functions according to specific guidelines and is monitored by a committee constituted by the Director, RCC. The drug bank provided full or partial help to 3440 patients during the reporting period.
- 3. Free Food (“Akshayapathram”)** – Free food was provided to 6750 patients belonging to low socio-economic status during the report period with the support of many philanthropic organizations.
- 4. Support for Paediatric patients** – “Prathyasa,” a voluntary group working in collaboration with Paediatric Oncology division gave financial and psychosocial support to children and their families.
- 5. Indian Cancer Society Support Scheme** – RCC was selected as one of the five cancer centres across India for receiving financial

support from the Indian Cancer Society for treatment of cancer.

Research and Development Activities

The RCC as a pioneer research institution in cancer research has produced several PhDs in Cancer Research. During the year 2016-17, around 25 scholars were pursuing PhD, 33 residents undertook specialisation in Medical, Paediatric and Surgical Oncology super speciality courses and 49 residents undertook postgraduate courses in Anaesthesia, Pathology, Radio diagnosis and Radiotherapy in the centre. The centre is also undertaking 155 research projects.

Cancer Control Activities in 2016-17

Trainer-Trainee Programmes – RCI conducted 53 trainer-trainee programmes for health care providers which included doctors, post graduate

medical students and paramedical staff from governmental and non-governmental institutions and 2,352 people were trained.

International School of Colposcopy – 8 Gynaecologists were given one-week hands on training and 151 BSc (MLT) students were given one day orientation programme on VIA, VILI and Colposcopy.

Early cancer detection, 2016

During the period under report, 10483 persons attended the Early Cancer Detection Clinic of the Division and 7111 attended outreach camps.

Cancer Outreach Programmes -2016

RCI conducted 102 cancer detection camps in various parts of the State in which 9223 people underwent screening. 6971 trainees were sensitised in cancer control through 48 cancer awareness programmes and also 10 cancer awareness programmes and nine cancer detection camps were conducted in Idukki District.

Conclusion

It is essential to give prime importance for early cancer detection for which doctors of primary and community health centres have a major role to play. Hence more involvement of government agencies is required. It is also necessary to carry out Community based research activities in primary and secondary prevention of cancers on large scale.

3.4 EXTERNAL TRADE

EXTERNAL TRADE IN INDIA

India exports approximately 7500 commodities to about 190 countries, and imports around 6000 commodities from 140 countries. As per the statistics published by the Ministry of Commerce and Industry, Government of India, there is a positive growth of 4.71 in the value of exports during 2016-17. The value of exports was ₹1,841,314.39 crore as compared to ₹1,716,377.99 crore during 2015-16. In continuation with the positive growth exhibited by exports for the last twelve months, exports during August 2017 have shown growth of 5.39 per cent valued at ₹152,365.23 crore as compared to ₹144,570.03 crore during August, 2016. Refined petroleum, gems; precious metals; coins, vehicles, machines; engines; pumps, organic chemicals, pharmaceuticals, cereals, iron and steel, clothing and electronics are the top ten commodities exported from India.

During August 2017, major commodity groups of export showing positive growth over the corresponding month of last year are Engineering Goods (19.53 per cent), Petroleum Products (36.56 per cent), Organic and Inorganic Chemicals (32.41 per cent), Drugs and Pharmaceuticals (4.21 per cent), and RMG of all Textiles (0.56 per cent). Cumulative value of exports for the period April-August 2017-18 was ₹763,145.37 crore as against ₹731,420.12 crore registering a positive growth of 4.34 per cent over the same period last year.

Imports in 2016-17 was ₹2,550,926.19 crore as against ₹2,490,298.03 crore registering a positive growth of 2.43 per cent over the same period last year. Imports during August 2017 were valued at ₹226,849.74 crore which was 15.65 per cent higher over the level of imports valued at ₹196,154.44 crore in August, 2016. Cumulative value of

imports for the period April- August 2017-18 was ₹1,169,589.74 crore as against ₹961,178.43 crore registering a positive growth of 21.68 per cent over the same period last year. The top ten imported commodities to India are Oil, Gems; precious metals; coins, electronics, machines; engines; pumps, organic chemicals, plastics, iron and steel, animal/vegetable fats and oils, ores, slag and ash, medical and technical equipment.

Major commodity group of imports showing high growth in August 2017 over the corresponding month of last year are petroleum, crude and products (14.22 per cent), electronic goods (27.44 per cent), machinery, electrical and non-electrical (18.35 per cent), gold (68.90 per cent) and pearls, precious and semi-precious stones (30.88 per cent).

In order to address the declining trend in exports, Government of India launched a new Foreign Trade Policy (FTP) for the period 2015-20 with a focus on supporting both manufacturing and services exports and improving the “Ease of Doing Business”. The policy provides a road map to align trade with the “Make in India” and “Digital India” programmes.

EXTERNAL TRADE IN KERALA

Kerala plays an important role in the export prospects of the nation by contributing to spices and marine products exports. The external trade in Kerala is mainly operated through Cochin Port. Major items of trade are cashew, coir and coir products, tea, coffee, pepper cardamom, ginger, other spices and spices oil and marine products, machinery, chemicals, coal, fertilizers and raw materials. Total traffic handled by the Port during 2016-17, both coastal and foreign, was 250.07

lakh MT registering an increase of 13.16 per cent as against 220.18 lakh MT in 2015-16. The growth percentage was only 2.33 per cent during 2015-16. Out of the total traffic, exports accounted for 47.59 lakh MT and imports 202.48 lakh MT in 2016-17 (**Table 3.4.1**).

Coastal and foreign exports through Cochin Port increased by 21.59 per cent during 2016-17 with 47.59 lakh MT as against 39.14 lakh MT in 2015-16. Coastal export which was 12.86 lakh MT increased to 14.18 lakh MT and foreign export increased from 26.28 lakh MT to 33.41 lakh MT from 2015-16 to 2016-17. Total import during the above period was 202.48 lakh MT that is 11.35 per cent higher than the import during 2015-16. This is mainly due to increase in foreign import from 121.44 lakh MT to 145.92 lakh MT during the period. Coastal imports registered a decrease of 6.35 per cent during this period.

Tea, cashew, coir and coir products, coffee, pepper cardamom, ginger, other spices and spices oil and marine products are the major items exported through Cochin Port. Export of tea & cashew kernels through Cochin Port continued to decrease during 2016-17 as recorded in preceding years. The exports of tea dropped by 4.19 per cent and cashew kernels by 22.75 per cent. After a long period, the export of coir products showed a substantial increase of 69.89 per cent from 2015-16 to 2016-17

registering 211177 MT of exports. Export of sea foods and coffee increased by 16.43 per cent and 2.11 per cent respectively during this period. Export from the State, which touched 47.59 lakh MT in 2016-17 from 43.11 lakh MT in 2011-12, increased by 10.39 per cent over a period of six years. (**Appendix 3.4.1**).

Imports through Cochin Port continued to increase in 2016-17 touching 202.48 lakh MT compared to 181.84 lakh MT in 2015-16 showing an increase of 11.36 per cent. Fertilizers and raw materials, iron and steel and machinery, newsprint, raw cashew nut, food grains, POL are the main items of import. During 2016-17, import of fertilizers and raw materials slightly decreased by 0.41 per cent. The growth rate of import of miscellaneous items which includes POL increased to 11.74 per cent during 2016-17 from 4.63 per cent in 2015-16. With regard to iron, steel and machinery, import decreased by 35.33 per cent in 2016-17 as against the increase of 44.47 per cent in 2015-16. During the review period, 174344 MT of food grains were imported through Cochin Port. There was no import of newsprint reported during 2015-16, but import of raw cashew nut decreased by 44.21 per cent. All items except fertilizers and raw materials, miscellaneous items and raw cashewnut marked a decreasing trend of imports during the review period. (**Appendix 3.4.2**).

Table 3.4.1
Cargo Handled at Cochin Port from 2011-12 to 2015-16, in lakh MT

Traffic	Export						Import					
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
1	2	3	4	5	6	7	8	9	10	11	12	13
Coastal	14.86	14.05	17.18	16.48	12.86	14.18	51.74	52.12	60.63	52.15	60.4	56.56
Foreign	28.25	24.29	25.32	24.10	26.28	33.41	106.06	107.99	105.73	123.22	121.44	145.92
Total	43.11	38.34	42.50	40.58	39.14	47.59	157.80	160.11	166.36	175.37	181.84	202.48

Source: Annual Report 2016, Cochin Port Trust.

Exports of Marine Products

Riding on a robust demand for its frozen shrimp and frozen fish in international markets, India exported 11.35 lakh MT of marine products worth ₹37870.9 crore in 2016-17 as against 9.46 lakh MT and ₹30,420.83 crore a year earlier. This indicated an increase of 19.98 per cent and 24.49 per cent respectively in quantity and value of exports of marine products during 2016-17 as compared to 2015-16. Marine products exports from Kerala also, increased both in quantity and value, in 2016-17. Quantity enhanced from 1.49 lakh MT in 2015-16 to 1.59 lakh MT in 2016-17 and value from ₹4,644.42 crore to ₹5,008.54 crore for the same period. The share of Kerala in Indian exports of marine products declined from 15.77 per cent to 14.02 per cent in case of quantity and from 15.27 per cent to 13.23 per cent for value during the period under review. Value of export of marine products from India and Kerala increased to 193.54 per cent and 150.16 per cent respectively between 2010-11 to 2016-17. (Table 3.4.2).

The major export items of marine products are frozen shrimp, frozen fish, frozen cuttle fish, frozen squid, dried items, live items and chilled items. Item wise details of marine products export from India and Kerala in 2016-17 are given in Appendix 3.4.3.

Frozen shrimp maintained its position as the top export item from India in 2016-17 accounting for 38.28 per cent in quantity and 65.25 per cent of the total earnings in value. Shrimp exports increased by 16.21 per cent in terms of quantity and 23.28 per cent in value. Frozen fish was the second largest export item, accounting for a share of 26.15 per cent in quantity and 11.78 per cent in value, registering a growth of 28.84 per cent.

In Kerala also, frozen shrimp is the largest export item from 2013-14 onwards but there is a decline of 10.56 per cent and 8.56 per cent respectively in the quantity and value of shrimp exported during 2016-17. Around 45133 MT of frozen shrimp accounting for a share of 28.36 per cent and worth ₹2178.01 crore (43.49 per cent share) was exported in 2016-17. Frozen fish was the second largest item of export with a share of 24 per cent in quantity and 11.65 per cent in value in 2016-17. In value terms, frozen squid was in the second position with 19.10 per cent.

US and South-East Asia retained their position as major importers, followed by the European Union and Japan. USA is the largest market for Indian marine products with a share of 30.32 per cent followed by South East Asia (30.27 per cent), European Union (18.20 per cent), Japan (6.92 per cent), Other countries (5.92 per cent), Middle East (4.83 per cent) and China (3.54 per cent). USA imported 1,88617 MT of Indian seafood,

Table 3.4.2
Export Trend of Marine Products – India and Kerala (2010-11 to 2016-17)

Year	India		Kerala		Kerala's share per cent	
	Quantity (Tonnes)	Value (₹lakh)	Quantity (Tonnes)	Value (₹Lakh)	Quantity	Value
2010-11	813091	1290147	124615	200210	15.33	15.52
2011-12	862021	1659723	155714	298833	18.06	18.00
2012-13	928215	1885626	166399	343585	17.93	18.22
2013-14	983756	3021326	165698	470636	16.84	15.58
2014-15	1051243	3344161	166754	516608	15.86	15.45
2015-16	945892	3042083	149138	464442	15.77	15.27
2016-17	1134948	3787090	159141	500854	14.02	13.23

Source: The Marine Products Export Development Agency (MPEDA).

registering a growth of 22.72 per cent in terms of quantity and 33 per cent in terms of value.

Major importers of marine products from India and their share in 2016-17 is shown in **Figure 3.4.1**.

Exports of Cashew

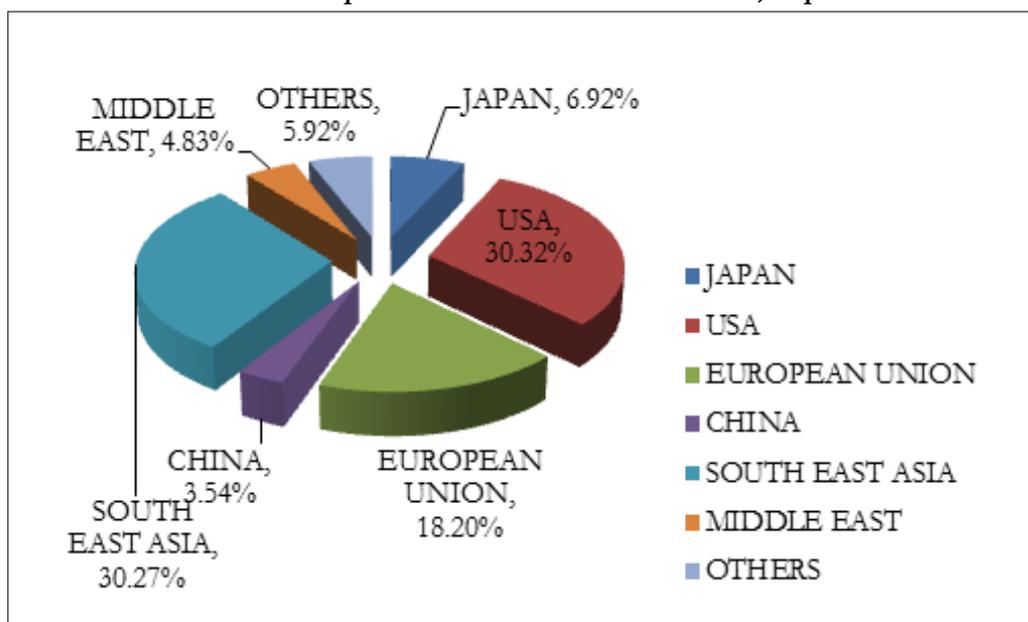
As per the export-import statistics, the share of agricultural products in the total export earnings of the country in 2015-16 was 6.84 per cent and cashew kernels ranked 6th among them contributing 4.28 per cent of the agri product exports. The total exports of cashew kernels from India in 2016-17 was 82,302 MT valued at ₹5168.78 crore as against 96,346 MT valued at ₹4952.12 crore in 2015-16. There has been a decrease of 14.58 per cent in quantity and increase of 4.38 per cent in value terms. The major markets for Indian cashew kernels in 2016-17 were USA, UAE, Japan, Saudi Arabia, Netherlands, France, Spain, Germany, Belgium, Korea, etc. In the history of Indian cashew industry, it is the first time that UAE became the largest importer of cashew kernels from India moving USA to the

second position. UAE's share is 23 per cent of the total and that of USA is 21 per cent. Among major markets, Singapore, Qatar, Algeria and Jordan recorded an increase and other major markets showed a decreasing trend in terms of quantity.

Exports of cashew kernels from Kerala showed a sharp decline in quantity by 24.87 per cent and 6.36 per cent in value terms in 2016-17 as compared to the preceding year. The exports of cashew kernels stood at 38054 MT valued at ₹2415.32 crore in 2016-17 which was 50652 MT valued at ₹2579.49 crore in 2015-16. Kerala's share in total exports of cashew kernels from India in quantitative terms, which was 52.57 per cent in 2015-16 declined to 46.24 per cent in 2016-17. In value terms it was 52.09 per cent in 2015-16 and reached 46.73 per cent in 2016-17 (**Table 3.4.3**).

The export of cashew nut shell liquid/cardanol from India during 2015-16 was 11677 MT valued at ₹57.59 crore and it decreased to 11422 MT valued at ₹44 crore in 2016-17. The quantity of cardanol exports decreased by 2.18 per cent and value by 23.63 per cent. Export of cardanol

Figure 3.4.1
Market-wise Exports of Marine Products 2016-17, in per cent



Source: Cochin Port Trust

Table 3.4.3
Export of Cashew Kernels – Kerala and India (2010-11 to 2015-16),
Quantity in MT, Value in ₹ crore

Year	Kerala*		India		Share of Kerala (per cent)	
	Quantity	Value	Quantity	Value	Quantity	Value
2010-11	56578	1478.67	105755	2819.39	53.50	52.45
2011-12	68655	2295.84	130869	4383.82	52.46	52.37
2012-13	53624	2138.47	100105	4046.23	53.57	52.85
2013-14	65679	2861.75	114791	5058.73	57.22	56.57
2014-15	68150	3098.75	118952	5432.85	57.29	57.04
2015-16	50652	2579.49	96346	4952.12	52.57	52.09
2016-17	38054	2415.32	82302	5168.78	46.24	46.73

*Export through Cochin Port.

Source: The Cashew Export Promotion Council of India

through Cochin Port was 111 MT with a value of ₹0.27crore in 2015-16. (Appendix 3.4.4).

India continued to be the largest producer of raw cashew nuts in the world. Production of raw nuts in India during 2016-17 was 779,335 MT as against the estimated production of 670,300 MT during 2015-16. Vietnam, Brazil Tanzania, Ivory Coast, Guinea,Bissau, Mozambique and Indonesia are the other main raw nut producing countries in the world. The total raw cashew nuts imported into India during 2016-17 was 770,446 MT valued at ₹8839.42 crore which was 958,339 MT valued at ₹8561.01 crore in 2015-16. The substantial increase in the value of imported raw cashew nuts was due to the change in the unit price of raw cashew nuts from ₹89.33 per kg to ₹114.73 per kg. Import of raw cashew nuts through Cochin Port which was 157905 MT in 2015-16 declined by 45 per cent to reach 86821 MT in 2016-17.

Exports of Coffee

Export of coffee from India during 2016-17 was reported as 35,5665 MT (provisional) valued at ₹5,634.84 crore. There is an increase of 11.83 per cent in quantity and 8.87 per cent in value over the previous year in which export was 31,8039 MT valued at ₹5,175.61 crore.

Export of coffee from Kerala through Cochin Port during 2016-17 was 5,5874 MT valued at ₹885.22

crore, as against 54720 MT valued at 858.16 crore in 2015-16. The 3 per cent decrease in the value is due to the fall in price of coffee.

Exports of Tea

Export of tea from India during 2016-17 was reported as 227,630 MT valued at ₹4,632.50 crore against 2,329,209 MT valued at 4,493.1 crore in 2015-16. The export slightly decreased by 2.27 per cent while the value increased by 31.02 per cent.

Export of tea from Kerala ports stood at 69,706 MT valued at 1,025.34 crore in 2015-16 as against 69,343 MT valued at 948.78 crore in 2014-15. The exports slightly increased by 0.52 per cent in volume and 8.07 per cent in terms of value. (Table 3.4.4).

Coir and Coir Products

Export of coir products from India increased from 7,52,020 MT in quantity and 1901.43 crore in terms of value in 2015-16 to 9,57,045 MT valued at 2,281.64 crore in 2016-17. In terms of quantity exports increased by 27.26 per cent and 19.19 per cent in terms of value. Main items of exports are coir pith, coir fibre, tufted mat, coir mat, coir yarn, handloom mat/mattings, geo textiles and other coir products. Leading market of coir products in

Table 3.4.4
Export of Tea from Kerala Ports and India (2010-11 to 2016-17),
Quantity in MT, Value in ₹ crore

Year	Kerala		India	
	Quantity	Value	Quantity	Value
2010-11	48104	552.12	222019	3058.31
2011-12	71784	742.87	214355	3304.83
2012-13	69017	904.62	216231	4005.93
2013-14	75036	1064.67	225764	4509.09
2014-15	69343	948.79	199077	3823.64
2015-16	69706	1025.34	232920	4493.10
2016-17*			227630	4632.50

*April-September.

Source: Tea Board, India.

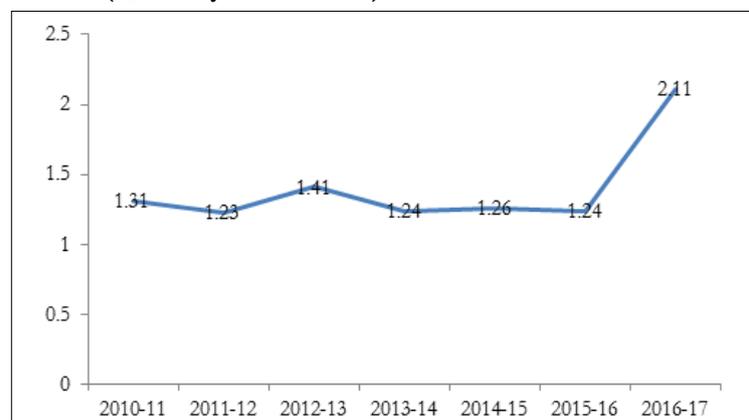
value terms during 2016-17 are USA(23 per cent), Netherland (8 per cent) and UK (4.85 per cent). USA imported 133,536.72 MT coir products worth ₹532.87 crore and Netherland 82487.53 MT worth ₹181.48 crore during this period. Major market of coir mats/mattings during the period 2011-17 were USA& UK. USA imported 595.89 MT coir mats worth ₹6.27 crore and 28,604.63 MT coir mattings worth ₹301.60 crore during this period. Major market of coir yarn during the above period was Netherlands followed by Italy. The Netherlands imported 1,547.89 MT of coir mats worth ₹11.69 crore during this period.

Export trend of coir and coir products through Cochin Port for the period from 2010-11 to 2016-17 is shown in **Figure 3.4.2**.

Exports of Spices

Indian spices exports continue its upward trend and attained an all time record in 2016-17 in both volume and earnings. During the above period, a total of 947,790 MT of spices and spice products valued at ₹17,664.61 crore was exported from India, as against 843,255 MT with a value of ₹16,238.23

Figure 3.4.2
Export Trend of Coir and Coir Products from Cochin Port
(Quantity in lakh MT) from 2010-11 to 2016-17



Source: Cochin Port Trust.

crore in 2015-16. It indicates an increase of 12.39 per cent in volume and 8.78 per cent in value.

The export of spices from Kerala (through Cochin and Thiruvananthapuram Ports) decreased to 84,656.95 MT valued at ₹3,857.88 crore in 2016-17 from 10,0076 MT with a value of ₹3,905.18 crore during 2015-16, registering a decline of 1.21 per cent in value and 15.41 per cent in volume. Pepper, cardamom, chilli, turmeric, coriander, cumin, fenugreek, other seed spices, nutmeg and mace, other miscellaneous spices, curry powder/mixture, spice oils and olernes and mint products are the main spices exported through Kerala's ports. Even though total export of spices from Kerala decreased during 2016-7, export of certain spices like turmeric, cumin, celery, fennel, fenugreek, garlic, nutmeg, mace and curry powder/mixture increased both in volume and value during the review period compared to the previous year.

04 CHAPTER

SOCIAL SERVICES





SOCIAL SERVICES

Kerala is known for its investment in its people. The prime focus on the welfare of its citizens has been the hallmark of Kerala's development story. Kerala's achievements in human development are the basis of its national and international fame. Continuing its commitment towards people, the Government has initiated four dedicated missions that focus on education, health, housing for all, and a clean environment. The welfare measures of the Government also extend to people migrating to the State. The policy initiatives are not only confined to people within its geographical boundaries but also to non-resident Keralites, who live beyond the boundaries of the State. The overall policy framework is oriented towards better living standards for the people of the State.

4.1 HUMAN RESOURCES

EDUCATION

Education in Kerala is both inclusive in nature and accessible to all the sections of population. The State, having attained very high rates of literacy and schooling, has a very well developed system that addresses the requirements and demands of all children up to 18 years. The State, with a few exceptions, has nearly zero dropout rate between classes 1 and 10 among the different sections of population. Education in a sense is the backbone of the Kerala's exceptional development experience. Although the status of education is remarkable and there are many laudable achievements in this sector,

there are some issues that need to be addressed. Education, especially higher education, in Kerala requires careful attention and improvement. The main task now is to focus on the quality of education, both school education and higher education. The issues which need to be addressed are related to academic achievement, skill education, incorporating technology in the curriculum, new training programmes for teachers, a focus on sports and fine arts, charting programmes that specifically address the requirements of differentially abled children, gender sensitivity, etc. While sustaining excellence in

academics and improving its inclusive nature remain the primary focus of all Plans, we also need to keep in mind the changing times and the changing demands of both productive and higher education sectors.

Keeping in sight the importance and the modern day requirements of education, the 13th Five-Year Plan has marked it as one of the main thrust areas for State interventions. On the State government's side education is one of the four Missions initiated in 2016. Funds have been earmarked for strengthening the Education Mission, "Pothu Vidyabhyasa Samrakshana Yajnam" to meet the

changing requirements of time and to upgrade classrooms and curriculum. In order to address the relevant issues in three sectors of education – school, higher, and technical education – and to formulate focussed projects for implementation during 13th Five-Year Plan, State Planning Board had constituted Working Groups. After meetings and consultations with experts, the Working Groups have submitted the reports.

Literacy

Literacy and education are important indicators of development in a society and play a central role

Box 4.1.1 Pothu Vidyabhyasa Samrakshana Yajnam (Public Education Rejuvenation Campaign)

Targets

1. Upgradation of 1,000 Schools as centre of excellence.
2. Conversion of all class rooms from Standard 9 to 12 as hi-tech class rooms.
3. Improvement of infrastructure facility in schools where more than 1,000 students are studying.
4. Improvement of infrastructure of primary schools
5. Encouragement of proficiency in English language.
6. Special packages for renovation of Schools which have completed 50 and 100 Years.

Organisational Structure

A State level mission with Chief Minister as the Chairman and Secretary, General Education as the mission secretary has been formed for coordinating various activities in connection with Public Education Rejuvenation campaign. District level mission has also been constituted with Chairperson, District Planning Committee as the Chairperson and District Collector as Mission Secretary. State and District Level Task Forces are also functioning for implementing various activities related with the campaign.

Upgradation of 1000 Schools as Centres of Excellence

The State Government will bear 50 per cent of total expenditure or maximum ₹5 crore for one School. The balance amount has to be borne by the participating agency or school PTA apart from depositing ₹1 crore for meeting the recurring expenditure. As a first phase KITCO has prepared master Plan of 37 Schools and Government has accorded administrative sanction to these schools. As the second phase, KITCO has prepared master Plan of 69 schools and government has accorded administrative sanction to these schools also.

Source: Directorate of Public Instruction

in human development. As regards literacy, Kerala ranks first in the country with literacy rate of 93.91 per cent closely followed by Lakshadweep (92.28 per cent) and Mizoram (91.58 per cent) (Census of India, 2011). Kerala's literacy rate, which was only 47.18 per cent in 1951, has almost doubled by 2011. The male-female literacy gap which was 22 per cent in 1951 has narrowed down to 4.41 per cent in 2011. Kerala holds the first place in the country in female literacy with 92 per cent and Rajasthan records the lowest female literacy rate (52.66 per cent) (Census of India, 2011). Literacy rate of the State from 1951 to 2011 is shown in **Appendix 4.1.1**.

Variation in literacy rate among the districts of Kerala is low. While Pathanamthitta district (96.93 per cent) reports the highest literacy rate in the State followed by Kottayam (96.4 per cent) and Alappuzha (96.26 per cent), Palakkad district has

the lowest literacy rate in the State (88.49 per cent). The low rate of literacy of the Palakkad district may be due to the prevalence of substantial percentage of Scheduled Caste (SC) and Scheduled Tribe (ST) population in the district. 11.01 per cent of the ST population in the State reporting an average literacy of 74.44 per cent are residing in the district. (The share of ST population in the district population is 1.67 per cent). The share of SC population in the district population is the highest in the State. Literacy rate by sex for districts from 2005 to 2017 are given in **Appendix 4.1.2**.

Kerala State Literacy Mission has been implementing literacy and equivalency programmes by appointing "Preraks" (field workers for propagating and continuing literacy programmes). Details of the number of people benefitted from equivalency programme of Literacy Mission from 2007-08 to 2015-16 are given in **Appendix 4.1.3**.

Box 4.1.2

Changathi: Literacy Programme for Migrant Workers

Changathi is a programme of the Kerala State Literacy Mission Authority for migrant workers. It aims to make them competent in reading and writing in Malayalam. The project was launched by Hon. Chief Minister of Kerala, Sri. Pinarai Vijayan on 12th December 2016 in Perumbavur municipality, Ernakulam district, the town with the largest migrant labour population in the State. For this programme, KSLMA has prepared a text book titled "Hamari Malayalam" (Our Malayalam) and the lessons of human rights, Constitutional values, rights of the workers and necessity of a healthy and hygienic living are incorporated in this text book. The book has been designed in such a way that migrant workers can interact with local people freely and fluently in their daily life. For identifying the migrant workers, a survey was conducted in Perumbavur Municipality and 3211 workers were identified. The classes have been started and 432 migrant workers have registered for "Çhangathi." Classes are being conducted in 27 batches at various places including madrassa halls, factories, library halls and other public places. On the basis of the success of the programme in Perumbavur, KSLMA has extended the project to all Districts. For the second phase of the programme, one local body from each district has been identified and surveys are being conducted in those selected local bodies. As the second phase of programme, the programme also aims at improving the literacy standards of migrants in Hindi with a view to helping them to adopt a healthy lifestyle. Special committees have been formed in the selected local bodies to reach out to the migrants and enrol them in the programme. This special initiative of the State Government is expected to be beneficial for around 25 lakh workers, who migrated to the State from different parts of the country.

Source: KSLMA, 2017

It is seen that the number of persons who attend the 7th equivalency examination is steadily decreasing. Over these 10 years, it decreased from 11,631 in 2005 to 4,939 in 2016. This indicates that the persons without atleast education equivalent to 7th standard are decreasing drastically over the years in the State.

Elementary Education

There were 12,981 schools in Kerala in 2016-17; 4,695 (36.17 per cent) government schools, 7,220 (55.62 per cent) aided schools and 1,066 (8.2 per cent) unaided schools. More government schools are functioning in lower primary section than upper primary or high school sections. Aided schools outnumber government schools in all sections.

Malappuram District has the largest number of schools (1,558) in the State followed by Kannur (1,308) and Kozhikode (1,283). Malappuram also has the largest number of government (553) and unaided schools (198) in the State. But the largest number of aided schools is functioning in Kannur district (963). Details of district-wise, management-wise and stage-wise number of schools in Kerala in 2016-17 are given in **Appendix 4.1.4**.

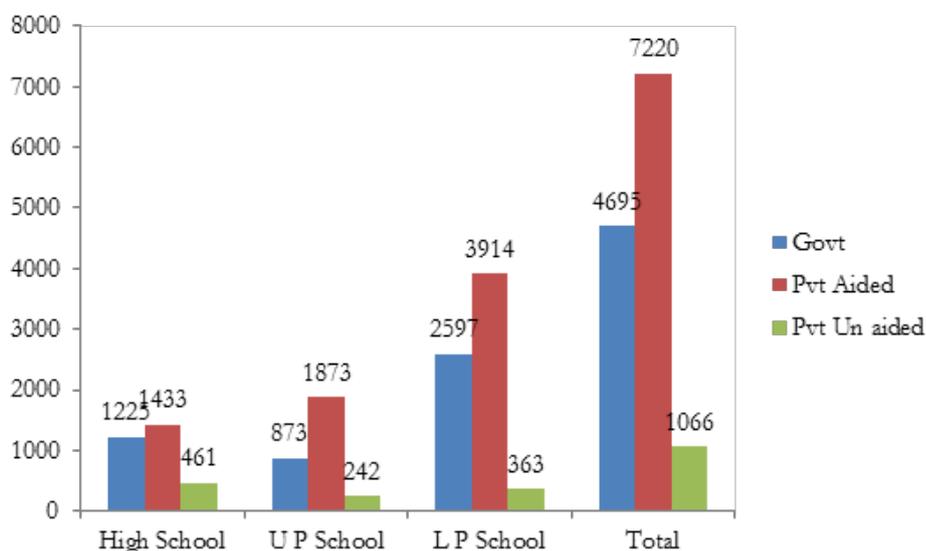
There are 1,436 schools in the State which are offering syllabi other than the one prescribed by the State Government. These include 1229 CBSE schools, 157 ICSE schools, 36 Kendriya Vidyalaya and 14 Jawahar Navodayas. One Jawahar Navodaya Vidyalaya school each is functioning in all the districts. District-wise details of schools with syllabi other than State syllabus in the year 2016-17 are given in **Appendix 4.1.5**.

Physical Infrastructure and Facilities in Government Schools

All the government schools in Kerala are functioning in pucca buildings. Own buildings have to be constructed for 126 government schools, which are now working in rented buildings. District-wise details of government schools having building facilities are given in **Appendix 4.1.6**.

Local Self Government Institutions (LSGI) and programmes like Sarva Shiksha Abhiyan (SSA) have contributed much to the overall development and improvement of physical infrastructure and common facilities in government schools in the State. Data shows that 98.6 per cent of government schools have access to drinking water and 99.95 per

Figure 4.1.1
Management-wise Number of Schools in the State 2016-17



Source: Directorate of Public Instruction

cent have urinals/latrines facilities. District-wise details of government schools having drinking water/latrines/urinal facilities in Kerala in 2017-18 are given in **Appendix 4.1.7**.

Enrolment of Students

Enrolment of students in the State has been declining in recent years; the number has declined from 37.02 lakh in 2016-17 to 36.8 lakh in 2017-18 (provisional). But there is slight increase in the enrolment in lower primary (LP) section and the increase from 2016-17 to 2017-18 in the number of the students in LP section is 18,066. The decline in Upper Primary (UP) section is 11,505 numbers in 2017-18, and the High School (HS) section shows a decrease of 28,641 students over the previous year. The stage-wise enrolment of students in schools in Kerala from 2013-14 to 2017-18 are given in **Appendix 4.1.8**. Details of management-wise and standard-wise enrolment of students in schools in Kerala in 2017-18 are given in **Appendix 4.1.9**. District-wise, stage-wise and sex-wise enrolment of students in schools in the State during 2017-18 is given in **Appendix 4.1.10**. The section wise decrease in the enrolment of

students in schools is shown in **Figure 4.1.2**.

A positive change has happened in terms of enrolment of students in government and government aided schools. In 2017, LP section saw an increase of 14,268 students and 8,070 in government schools alone compared to the enrolment of previous year. It is a known fact that the number of children is decreasing over the years due to the demographic transition of low birth rate in Kerala. Still the enrolment in public schools increased mainly because of the shift of students from unaided schools. As **Table 4.1.1** shows, there has been a decline in enrolment in unaided schools.

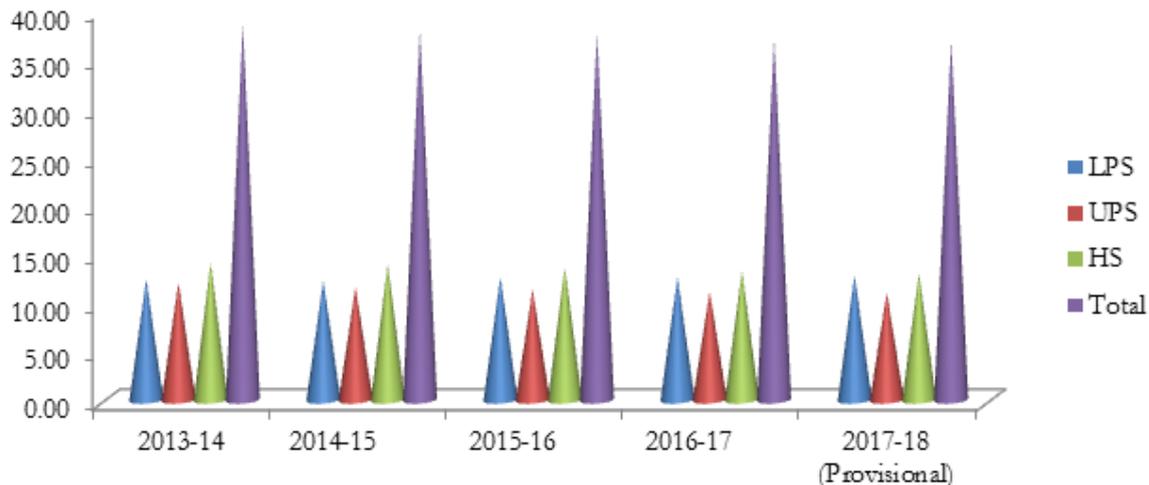
Enrolment of Girls in Schools

Girl students constitute 48.98 per cent of the total student enrolment in schools. Boys outnumbered girls in all the districts. But the gender gap is very narrow in Kerala in terms of enrolment.

Strength of Scheduled Caste and Scheduled Tribe Students

In 2017-18, Scheduled Caste (SC) students constitute 10.60 per cent of total students in the State. The percentage of SC students in

Figure 4.1.2
Stage-wise Enrolment of Students in Schools in Kerala (in lakh)



Source: Directorate of Public Instruction

Table 4.1.1
Change in Enrolment of Students in Schools (2016-17 to 2017-18)

Management	Standards							Total I to X
	I	II	III	IV	Total	V-VII	VIII-X	
Government	5703	354	1346	667	8070	-5192	-2409	469
Aided	6495	-1243	216	1302	6770	-5798	-17143	-16171
Un Aided	-1122	63	-128	615	-572	-2834	-1729	-5135
Grand Total	11076	-826	1434	2584	14268	-13824	-21281	-20837

Source: Directorate of Public Instruction

government schools, private aided schools and private unaided schools are 13.48 per cent, 10.33 per cent and 4.13 per cent respectively. It is seen that the percentage of SC students in government schools is higher than that of private aided and private unaided schools.

Scheduled Tribe (ST) students constitute 2.07 per cent of total enrolment in schools in the year 2017-18. The percentage of ST students in government schools, private aided schools and private unaided schools are 3.86 per cent, 1.44 per cent and 0.46 per cent respectively in 2017-18. The standard-wise strength of SC/ST students in the State in 2017-18 is given in **Appendix 4.1.11** Out of the total number of SC/ST students in the State, only 4.38 per cent of SC and 2.5 per cent of ST students are enrolled in private unaided schools. The rest are admitted in government and private aided schools. **Table 4.1.2** gives the proportion of SC/ST students in schools in 2017-18.

Dropout Rate

Kerala has achieved the distinction of having the lowest dropout rate of school students among the Indian States. In the year 2016-17, dropout ratio among school students in Kerala was 0.22 per cent. The dropout ratios in lower primary stage and high school stage are higher compared to that of the UP stage. Dropout rate is highest among high school students.

Among the districts, Idukki has the highest dropout ratio in the lower primary section (0.55 per cent). In upper primary section and high school, Wayanad has the highest ratios with 0.58 per cent and 2.8 per cent respectively. The high dropout ratio may be attributed to the higher population of ST students in these districts. District-wise/ stage-wise dropout ratio in schools in 2016-17 is given in **Appendix 4.1.12**. Dropout ratio among SC students in Kerala in 2016-17 was 0.26 per cent and that of ST students was 2.27 per cent. District wise and stage wise details of drop out among SC

Table 4.1.2
Proportion of SC/ST Students in Schools in 2017-18

Management	Others	SC	ST
Government	82.66	13.48	3.86
Private Aided	88.23	10.33	1.44
Private Unaided	95.41	4.13	0.46
Total	87.33	10.60	2.07

Source: Directorate of Public Instruction

and ST students in Kerala for 2016-17 are given in **Appendices 4.1.13** and **4.1.14**.

Number of Teachers

The number of school teachers in Kerala including Teachers Training Institute (TTI) teachers during 2016-17 was 163,160. Out of this 97,457 (59.7 per cent) teachers are working in aided schools and 15,457 (9.47 per cent) teachers are working in private unaided schools. The remaining 30.8 per cent of teachers are working in government schools. 51.53 per cent of total teachers in the State are teaching in high schools, 24.61 per cent in upper primary schools, 23.51 per cent in lower primary schools and the remaining (0.34 per cent) in TTIs. 72.66 per cent of total teachers in the State are women. Details of stage-wise and management-wise number of teachers in Kerala in 2016-17 are given in **Appendix 4.1.15**.

Uneconomic Schools

Schools with insufficient strength of pupils (below an average of 15 students per class) are termed as uneconomic schools. In 2016-17, there were 5,723 uneconomic schools in the State, which was an increase of 142 schools over the previous year. Out of these 2,589 were government schools and 3,134 were in the aided sector. District-wise analysis shows that highest number of uneconomic schools was in Kannur (737) followed by Kozhikode (603) and Kottayam (562). The highest number of uneconomic schools in aided sector is in Kannur (601) followed by Kozhikode (433). In the government sector, Ernakulam has the largest (283) number of uneconomic schools followed by Thiruvananthapuram (281). Among the government uneconomic schools, 73.23 per cent are lower primary schools. In the aided sector also 78.05 per cent of uneconomic schools are from lower primary section. District-wise details of uneconomic schools in the State in 2016-17 are given in **Appendix 4.1.16**.

Sarva Shiksha Abhiyan (SSA)

Sarva Shiksha Abhiyaan was introduced in 2000-2001 as a flagship programme of Government of

India to provide useful and relevant elementary education for all children in the age group of 6 to 14 by 2010. The programme seeks active participation of the community in the management of schools without social, regional, economic and gender barriers. It comprises all activities of school education-providing physical infrastructure, free text book for children, encouraging enrolment of girls and teacher training. The sharing of funds between the Central and the State governments was 75:25 in the 10th Five-Year Plan. The funding pattern has been modified to 60:40.

Higher Secondary Education

Higher Secondary courses were introduced in the State in 1990-91 to reorganise the secondary level of education in accordance with National Education Policy. There were 2,073 Higher Secondary Schools in 2016 in the State. Out of these 833 (40.18 per cent) are Government schools, 854 (41.2 per cent) are aided schools and the remaining 386 (18.62 per cent) are unaided and technical schools. Among the districts, Malappuram has the largest number of Higher Secondary Schools (248) in the State followed by Ernakulam (209) and Thrissur (204) respectively.

There are 7,245 batches of higher secondary classes in 2017. The enrolment in Higher Secondary Schools was 382,051. Malappuram had the largest number of batches (1,052) with an enrolment capacity of 56,802 students. District-wise and management-wise number of Higher Secondary Schools and number of batches are given in **Appendix 4.1.17** and District-wise enrolment of students in Higher Secondary Schools are given in **Appendix 4.1.18**.

The pass percentage of students in higher secondary courses decreased to 70.91 per cent in 2016-17 from 73.18 per cent in 2015-16. During 2017, there were 11,911 students who secured A+ and 305,373 students were eligible for higher studies. The details are given in **Appendices 4.1.19** and **4.1.20**. The pass percentage of SC and ST students in Higher Secondary schools has slightly increased in 2016-17 compared to 2015-16. The pass percentage of SC

students increased from 57.77 per cent to 59.42 per cent and ST students from 58.12 per cent to 58.13 per cent during 2016-17. Details are given in **Appendices 4.1.21 and 4.1.22.**

Vocational Higher Secondary Education

Vocational higher secondary education was introduced in the State in 1983-84 to impart education at plus two level with the objective of achieving self/wage/direct employment as well as vertical mobility.

There are 389 Vocational Higher Secondary Schools in the State with a total of 1,101 batches. Out of these 261 are in the Government sector and

128 in the Aided sector. Kollam (52) followed by Thiruvananthapuram (41) has the largest number of Vocational Higher Secondary Schools in the State. District wise details of Vocational Higher Secondary Schools and courses during 2017-18 are given in **Appendix 4.1.23.**

The percentage of students eligible for higher education in Vocational Higher Secondary examination in March 2017 is 81.5 per cent registering a rise from 74.92 per cent in 2016 March. The number of students who appeared and those who passed Vocational Higher Secondary

Box 4.1.3

Working Group for 13th Five-Year Plan on School Education

The major recommendations of 13th FYP Working Group on School Education are:

- Integration and co-ordination of the functions of the different Departments and Centrally Sponsored Agencies, including the higher secondary, vocational higher secondary education, SSA and RMSA under a single Directorate of School Education.
- School Sanitation Scheme- Clean campus programme to cater to cleanliness of campus, construction and maintenance of separate toilets for boys and girls, disposal of sanitary napkins and other accessories, upkeep of noon-meal serving areas etc. are the suggested components.
- A new Tribal Education Package aiming at the complete elimination of the drop outs among tribal students has to be introduced.
- Develop a 'School Education Information System (SEIS)' which maintains all the performance indicators of schools including detailed statistics of academic performance, profiles of students and teachers, performance of schools in various competitions.
- Introduction of a Comprehensive School Health Programme that not only envisages, healthcare, food and nutrition but also envisages the development of the child into a physically equipped and mentally alert individual. Arts, Sports and Crafts should be included in the school curriculum.
- Creation and development of smart classrooms that would enable the learner to use state-of-art technologies of learning.
- Creation of classroom libraries as well as school libraries cum reading rooms.
- Establishment of Biodiversity Parks to enhance the learning environment in schools in communion with nature.
- Provision for the wholesome development of the differently abled children in the school environment so that inclusive education becomes viable in both concept and practice.
- The selection and appointment of teachers in aided schools and deployment of protected teachers in government schools should be handed over to Kerala Public Service commission.
- The integration of the financing of education by the State Government, Central Government Schemes and Philanthropic agencies through the Creation of an Integrated Education Fund, that would monitor the acquisition and allocation of finances and utilisation in each sector.
- Development of SCERT into an autonomous institute of research and training centre.
- To provide linkages between the SCERT, DIETs, BRCS and CRCs so as to improve the training imparted to school teachers and for academic monitoring.
- Curriculum Committee constituted should have experts acknowledged at national level.
- The textbook committee should monitor the preparation of textbooks, educational accessories and technologies and the timely delivery of these resources to schools.

Source: 13th FYP Working Group Report on School Education, 2017

examination from 2010 to 2017 and the results of school going students are given in **Appendices 4.1.24 and 4.1.25**.

13th Five-Year Plan Working Group Report on School Education

The Working Group on School Education addresses four major categories of the issues. The first one is related to the infrastructural needs which include maintenance and up-gradation of school buildings, class room facilities, play grounds, water taps, libraries, laboratories, toilets, facilities for Noon Meal Scheme and canteen facilities. The second is the up-gradation of pedagogy in schools including online facilities, smart class rooms, upgradation of teachers including state-of-art of teachers training. The third is the transformation of curriculum and syllabi that brings school education on par with the quality criteria existing all over the world. There is also the need to address the special requirements of the marginalised and excluded, including Adivasis, Dalits, language minorities and coastal children who are the victims of a system that primarily caters to the needs of the elite classes in society. The report also points out the importance of integrating the pedagogy for differently-abled children with the existing system.

University and Higher Education

There are 14 universities functioning in the State. Out of these, four universities viz. Kerala,

Mahatma Gandhi, Calicut and Kannur are general in nature and offer general science and arts subjects courses. Sree Sankaracharya University of Sanskrit, Thunchath Ezhuthachan Malayalam University, Cochin University of Science and Technology, Kerala Agricultural University, Kerala Veterinary and Animal Science University, Kerala University of Health Sciences, Kerala University of Fisheries and Ocean Studies and Kerala Technological University offer specialised courses in specified subject areas. Besides these, the National University of Advanced Legal Studies (NUALS) established in 2005 and the Central University established in Kasargod district are also functioning in the State.

Arts and Science Colleges

There are 217 Arts and Science Colleges in the State comprising 156 private aided colleges and 61 Government Colleges. In 2016-17, Ernakulam (25) had the largest number of Arts and Science colleges in the State followed by Kottayam (23). Thiruvananthapuram and Kozhikode (10) have the largest number of Government colleges in the State. District-wise number of Arts and Science colleges in the State in 2016-17 is given in **Appendix 4.1.26**. In addition to the government and aided colleges there are large number of unaided arts and science colleges functioning in the State.

Enrolment of Students

Total number of students enrolled in various Arts and Science Colleges (excluding unaided colleges)

Table 4.1.3
Enrolment of Students in Arts and Science Colleges in 2016-17

Course	Total	Girls	Boys	% of Girls
B. A.	117,874	77,334	40,540	65.61
B.Sc.	99,017	73,809	25,208	74.54
B.Com.	42,519	26,819	15,700	63.08
Total	259,410	177,962	81,448	68.60
M.A.	13,733	9,307	4,426	67.77
M.Sc.	16,772	11,705	5,067	69.79
M.Com	5,632	4,009	1,623	71.18
Total	36,137	25,021	11,116	69.24
Grand Total	295,547	202,983	92,564	68.68

Source: Directorate of Collegiate Education

under the four general universities in Kerala during 2016-17 is 2.96 lakh. Of this 2.03 lakh (68.68 per cent) are girls. (Table 4.1.3).

Out of the total students enrolled for degree courses, 45.43 per cent are enrolled for BA degree courses, 38.17 per cent enrolled for BSc and 16.39 per cent enrolled for B.Com degree courses. Girls constitute 68.68 per cent of total enrolment for degree courses.

For BA degree courses, 27 subjects are offered. Among the subjects, Economics has the largest number of enrolment of students. Besides, 31 subjects are offered for BSc course and Mathematics has the largest number of student enrolment. Details of enrolment of students in Arts and Science Colleges for BA, BSc and B.Com are given in Appendices 4.1.27, 4.1.28 and 4.1.29. In the State, 36,137 students were doing post graduate course in 2016-17. Girl students constitute 69.24

Box 4.1.4

Recommendations of Working Group on Higher Education

The Working Group has examined the areas where qualitative changes in higher education are necessary. For improving the quality of education, transforming the benefits from Higher Education Institutions to General Public and to enhance the employability of the students, the Working Group has focussed on areas such as teaching-learning process, research, infrastructure, skilling and innovation. Having examined these aspects, the report recommends some proposals and projects for implementation in 13th Five-Year Plan. In order to ensure quality education in government and aided sectors, it is recommended to strengthen monitoring mechanisms and recruitment processes at various levels. Policy recommendations have also been made to transform the administrative and academic structures that are impeding the growth of academic excellence in the Higher Education sector. The major recommendations of the Working Group are:

- Massive Open Online Courses (MOOCS)
- State Open University
- National Knowledge Network (NKN)
- Internal Quality Assurance Cell (IQAC)
- Ensure optimal student-teacher ratio
- Industry-Student-University linkages
- Promote collaboration and develop Linkages
- Implement Erudite Programme
- Provide a Public Research Fund
- Inter University Centres should be strengthened with more financial resources
- Start Dual Degree Programme
- Start Capacity Development Initiatives
- Ensure Job Training and Apprenticeship for Students
- Implement Scheme for Fostering Community Engagement
- Implement Science and Social Science Popularisation Programmes
- Start Student Support Schemes
- Initiate Faculty Support Programmes
- Establish Emeritus Professorship
- Provide Scholarships, Grants and Incentives to students
- Avoid Duplication of Activities
- Evaluate of On-going Programmes
- Enhance Physical Infrastructure and Lab/Library Infrastructure
- Ensure Career Awards Scheme for Mid-Career Faculty

Source: 13th FYP Working Group Report on Higher Education

Table 4.1.4
Percentage of SC/ST Students in Higher Education in 2016-17

Name of Course	Total Students	SC Students	% of SC Students	ST Students	% of ST Students
B.A	117,874	13,685	11.61	2946	2.50
B.Sc	99,017	14,476	14.62	929	0.94
B.Com	42,519	5,807	13.66	748	1.76
Total	259,410	33,968	13.09	4,623	1.78
M.A	13,733	2,125	15.47	702	5.11
M.Sc	16,772	1,996	11.90	494	2.95
M.Com	5,632	726	12.89	133	2.36
Total	36,137	4,847	13.41	1,329	3.68
Grand Total	295,547	38,815	13.13	5,952	2.01

Source: Directorate of Collegiate Education

per cent of those enrolled. Details of enrolment of students in Arts and Science colleges for MA, MSc and M.Com courses are given in **Appendices 4.1.30, 4.1.31 and 4.1.32**

Scheduled Caste/ Scheduled Tribe Students

The enrolment of SC students in degree and post graduate course in the State is 33,968 and 4,847 respectively. SC students constitute 13.13 per cent of total students in 2016-17. (**Table 4.1.4**) Among SC students, girls constitute 72.02 per cent of total students in Arts and Science colleges.

The number of ST students enrolled for courses in arts and science colleges in 2016-17 is 5,952. The enrolment of ST students in degree and post graduate courses are 4,623 and 1,329 respectively. Girls constitute 66.81 per cent of the total ST enrolment in Arts and Science colleges. Details of enrolment of SC and ST students in Arts and Science Colleges in Kerala during 2016-17 are given in **Appendix 4.1.33**. **Figure 4.1.3** gives the percentage of SC/ST students in Degree and PG Courses in 2016-17.

Scholarships

Central and State sector scholarships of 13 types are given to students. Various scholarships

including Kerala State Suvarna Jubilee Scholarship (for 4,000 students), District Merit Scholarship (for 11,586 students) and Post Matric Scholarships (for 1,21,215 students) have been given during 2016-17. The Directorate of Collegiate Education has set up LED display board giving the details of scholarships offered by the Government of Kerala and India. The details of number of scholarships offered from 2014-15 to 2016-17 is given in **Appendix 4.1.34**.

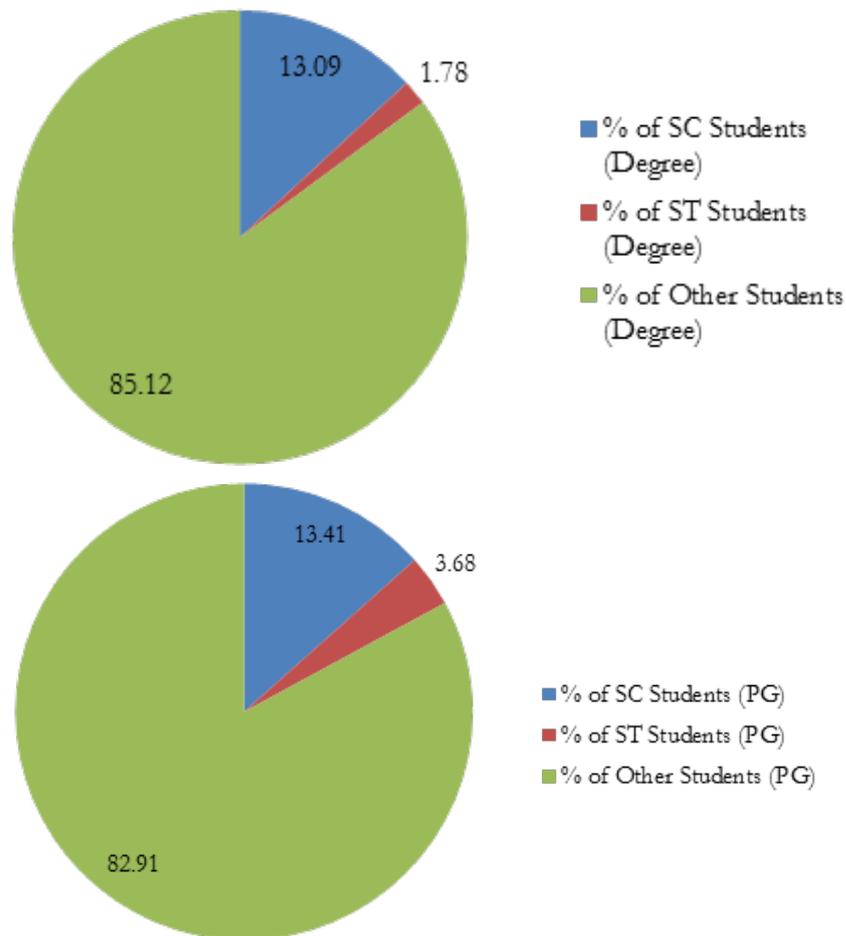
Teachers

The number of teachers in Arts and Science Colleges in the State in 2016-17 was 9,742, out of whom 56.12 per cent are women. University-wise number of teachers in Arts and Science Colleges in the year 2014-15 to 2016-17 is given in **Appendix 4.1.35**. There are 3,343 (34.31 per cent) teachers in Arts and Science Colleges in the State having Ph.D degree. Details are given in **Appendix 4.1.36**. A total of 2,393 guest lecturers were working in Arts and Science Colleges of the State in 2016-17. Details are given in **Appendix 4.1.37**.

Kerala Council for Historical Research (KCHR)

Kerala Council for Historical Research is an autonomous academic institution, established

Figure 4.1.3
Percentage of SC/ST Students in Degree and PG Courses in 2016-17



Source: Directorate of Collegiate Education

in 2001, committed to scientific research in archaeology, history and social sciences. It is a recognised research centre of the University of Kerala and has academic affiliations with and has bilateral academic and exchange agreements with leading universities and research institutes in India and abroad. KCHR is to publish a comprehensive volume on the scientific history of Kerala from pre-historic to the present times.

A sustainable/historical tourism project is conceived in the Kodungallur-Paravur zone and KCHR is identified as the nodal agency to provide technical assistance. From 2006-07 onwards KCHR has successfully undertaken multi-disciplinary

excavation at Pattanam. The excavation has yielded significant evidences for re-conceptualising the early history of Kerala.

Kerala State Skill Development Project and ASAP

The Kerala State Skill Development Project was launched in July 2012 to enhance the employability of the youth and create opportunities for productive employment within and outside the State. The Asian Development Bank (ADB) through Department of Economic Affairs, Government of India has been engaged and partnered by the State for strengthening and scaling up ASAP.

Additional Skill Acquisition Programme (ASAP) is designed by the Department of Higher Education and the Department of General Education to address the issue of low employability of the students. It aims at tackling the problem of educational unemployment by introducing market-relevant foundation training, vocational training and career counseling alongside the general curriculum at the higher secondary and under graduate levels. ASAP is being implemented in 836 Higher Secondary Schools, 26 VHSEs and 108 colleges in 2016-17. A total of 29,411 students are undergoing training in the year 2016-17. More than 200 programme managers have been engaged to help the ASAP Secretariat for running the programme and 1,900 Skill Development Executives have been recruited for providing foundation training in Communicative English and Information Technology. Eighty five skill courses in 30 sectors have been included for the trainings in 2016-17.

Technical Education

Technical education aims at human resource development by way of application of technology

for the benefit of the society, in terms of improving the quality of life, enhancing industrial productivity and improvising technologies for the overall development of the community. Technical education imparts education to young generation enabling them to contribute to the sustainable development and improvement of quality of life of the society.

Directorate of Technical Education is the nodal department for technical education in the State. The details of technical institutions under the administrative and financial control of Directorate of Technical Education is given in **Appendix 4.1.38**. Various projects are being undertaken through funding from different agencies including Ministry of Human Resource Development, All India Council for Technical Education, Technical Education Quality Improvement Programme (TEQIP), Trivandrum Engineering Science and Technology (TREST) Research Park, Technology Business Incubators (TBI), Department of Science and Technology (DST), and University Grants Commission etc. Apart from this, up gradation of laboratories in various institutions are being taken up under Modernisation and Removal of Obsolescence (MODROBS) scheme of AICTE.

Box 4.1.5 Working Group on Technical Education

Major specific suggestions by the Working Group to address the issues in the area of Technical Education in the State are:

1. State Skills and Employment Policy to be developed.
2. Develop and adopt a Quality Assurance Framework in line with NSQF.
3. Develop a Professional and Career Development Policy (PCD) for Technical and Vocational Education Training (TVET) managerial and academic personnel.
4. Formation of a bridge organisation to relate R&D institutes and vocational education system. It should help the vocationally trained person to get the benefits of R&D
5. A central vocational training standardisation system, accredited nationally and globally, for maintaining the quality of the vocational education can enhance credibility of vocationally trained persons in the industry.
6. Training need analysis should be done taking into consideration job potential in local and global perspective. Creating job opportunities regionally can help to maintain the equilibrium in future days for ensuring inclusive socio-economic growth.
7. Working group also examined the concept of Academic Autonomy in order to achieve the aforesaid objectives of quality education and it recommended Academic Autonomy ensuring accountability by all the stakeholders.

Source: 13th FYP Working Group Report on Technical Education

Engineering Colleges

There are 180 engineering colleges in the State with a sanctioned intake of 57,544 in 2017. Out of these engineering colleges, 168 (93.33 per cent) are self financing colleges (unaided), 9 (5 per cent) are government colleges and 3 (1.67 per cent) are private aided colleges. Largest number of the unaided engineering colleges are functioning in Ernakulam (33) followed by Thiruvananthapuram (28). There is no government engineering college in Kollam, Pathanamthitta, Alappuzha, Ernakulam, Malappuram and Kasargod Districts. The district wise and management wise details of engineering colleges and sanctioned intake are given in **Appendix 4.1.39**. The sanctioned intake of Govt. colleges during 2017 was 3,340 (5.48 per cent), aided colleges 1,850 (3.22 per cent) and unaided colleges 52,354 (90.98 per cent).

Of the engineering colleges in Kerala, the largest number of branch wise seats was in Electronics and Communication (11,211) followed by Mechanical

Engineering (10,912), Civil Engineering (10,038) and Computer Science and Engineering (9,897). Branch-wise distribution of seats in engineering colleges in 2017-18 is given in **Appendix 4.1.40**. The number of students enrolled in government and aided engineering colleges for graduate courses in 2017-18 increased to 6,222 from 5,134 in 2016-17. The proportion of girls' enrolment has also increased to 39.86 per cent in 2017-18 from 36.42 per cent in 2016-17. For post graduate courses, 1,606 students have been admitted in government and aided engineering colleges in 2017-18. Girl students constitute 58.78 per cent of total students in government and aided engineering colleges studying for post graduate courses. Details are given in **Appendices 4.1.41 and 4.1.42**.

Academic Excellence in Engineering Colleges

The academic excellence in Government Engineering Colleges is high and appreciable

Box 4.1.6

Technology Business Incubation Centres in Engineering Colleges and Polytechnics

To promote entrepreneurial ventures of the students in campus, the State Government has started Technology Business Incubation centres in various Engineering Colleges and Polytechnics in the State. Government has sanctioned Technology Incubation Centres in 8 Government engineering colleges, 4 polytechnics and one at Supervisory Development Centre at Kalamassery. The major objectives of the initiative are:

- i. Assist prospective entrepreneurs in nurturing their technology ideas and promote successful corporate entity at pre-start up and start up stages.
- ii. Promote innovation among budding engineers trained by institution.
- iii. Commercialise the ongoing research.
- iv. Spot and nurture entrepreneurial talents from among the students.

At present there are eight incubators in CET and many applications are being mentored. Government Engineering College, Thrissur has proposed to widen the services of TBI and extend further by developing more infrastructure and providing more services to students. At GEC Sreekrishnapuram, five cubicles are ready while at GEC Kannur, the number of cubicles is six. At present five start up companies have registered and are in the GECBH-TBI. The incubates are M/s CAIRUZ, M/s Lotus Button, M/s Mear Enterprises, M/s KRACKiT and M/s CREA8.

Source: Directorate of Technical Education, Kerala

and this was due to the high pass percentage and increasing placement of students in reputed firms. The placement record of the students in various government institutions is also relatively high. A large number of students are also getting qualified for higher studies through competitive examinations like GATE, CAT etc. Most of the students get placement in multinational firms like WIPRO, MAHENDRA, TCS, and BOSCH etc. Placement details of students of various Govt. Engineering colleges in 2016-17 are given in **Table 4.1.5**.

To enhance the academic excellence, visiting faculty programmes are conducted in Government Engineering Colleges of the State and the details are given in **Appendix 4.1.43**.

Polytechnics and Technical High Schools

Forty five Government polytechnics and 6 private aided polytechnics are functioning in Kerala. The annual intake of students in government polytechnics and private aided polytechnics during 2017-18 are 10,749 and 1,531 respectively. The total number of students in government polytechnics during the year 2017-18 is 27,163 and that of private aided polytechnics is 4,209. Details of annual intake and student strength in polytechnics for the year 2015-16 to

2017-18 are given in **Appendices 4.1.44 and 4.1.45**. Details of trade-wise annual intake of students in polytechnics of the State in 2017-18 are given in **Appendix 4.1.46**. Student intake is highest in the trade of Computer Engineering (2,016) followed by Electronics Engineering (2,000), Mechanical Engineering (1,660) and Civil Engineering (1,310).

Total number of teachers working in polytechnics of the State is 1,905. Women teachers constitute 30.29 per cent of the total number of teachers in polytechnics. Student-teacher ratio is highly favourable in private aided colleges for the last four years. (**Table 4.1.6**).

Details of number of students and teachers in polytechnics are given in **Appendix 4.1.47**. Number of SC/ST students and SC/ST teachers in polytechnics in the reporting year are given in **Appendix 4.1.48**. It is seen that the percentage of SC/ST students is low and it is decreasing over the last three years. (**Table 4.1.7**).

Thirty nine Government technical high schools are functioning in the State. Total number of students and teachers in technical high schools in the year 2017-18 are 7,996 and 731 respectively. Women teachers constitute 26.13 per cent of teachers in technical high schools. Number of students and teachers in technical high schools in 2015-16 to

Table 4.1.5
Placement Details of Students of Various Engineering College in 2016-17

Sl No.	Name of College	No. of offers
1	College of Engineering, Thiruvananthapuram	960
2	Government. Engineering College, Barton Hill	132
3	RIT, Kottayam	129
4	Government Engineering College, Idukki	13
5	Government Engineering College, Thrissur	353
6	Government Engineering College, Palakkad	35
7	Government Engineering College, Kozhikkode	4
8	Government Engineering College, Wayanad	3
9	Government Engineering College, Kannur	101
	Total	1,730

Source: Directorate of Technical Education

Table 4.1.6
Student-Teacher Ratio in Polytechnics

Type of Institutions	2014	2015	2016	2017
Government	21	20	20	18
Private (Aided)	11	10	11	11
Total	19	17	18	16

Source: Directorate of Technical Education

2017-18 are given in **Appendix 4.1.49**. Compared to the previous year, the percentage of SC and ST students in technical high schools has declined from 12.76 per cent to 9.36 per cent and from 0.96 per cent to 0.63 per cent respectively. Details are given in **Appendices 4.1.50 and 4.1.51**.

The higher and technical education in Kerala has to be capable of meeting the increasing employment opportunities in various sectors. For meeting the needs, the State has to introduce various industry based, skill based and job oriented courses and also impart life skills to the graduates. The skill based courses need to be collated so that duplication can be avoided and linkages can be established between various agencies.

Plan Outlay for and Expenditure on Education

During the first year of the 11th Five-Year Plan ₹590.24 crore had been earmarked for education sector of which 98.78 per cent was expended. The outlay has increased significantly during these five years with ₹1,330.79 crore being earmarked in 2016-17. The percentage share of higher

education has increased significantly over these five years whereas outlay of technical education has increased only marginally during this period. General education got more than 80 per cent of the total allocation in all these five years. It is also seen that the percentage allocation for technical education is lower, but its percentage expenditure is better. (**Table 4.1.8**).

Though the total outlay for all the three sub-sectors is increasing over these five years (**Figure 4.1.4**), except for the last year, the percentage share of school education shows a declining trend during this period. It decreased from 56 per cent in 2012-13 to 37.8 per cent in 2016-17. This may be due to the fact that the State has achieved most of the primary targets in school education.

Way Forward

As per the recently published Report on Gender Vulnerability Index by Plan International (NGO working in the field of Child Rights in India), Kerala is one of the safest place for girls to live and the State is ranked 2nd safest place just after Goa. But Kerala's rank in the Educational Index is only

Table 4.1.7
Percentage of SC/ST Students in Polytechnics

Type of Institution	2014-15				2015-16				2016-17			
	SC	ST	Oth-ers	Total	SC	ST	Oth-ers	To-tal	SC	ST	Others	Total
Government	8.19	1.01	90.8	100	7.08	0.86	92.06	100	6.86	0.71	92.43	100
Private (Aided)	9.84	0.47	89.69	100	5.46	0.38	94.16	100	5.13	0.47	94.40	100
Total	8.4	0.94	90.66	100	6.86	0.79	92.36	100	6.62	0.68	92.70	100

Source: Directorate of Technical Education

Table 4.1.8
Plan Outlay and Expenditure in the XII Five-Year Plan (in ₹ crore)

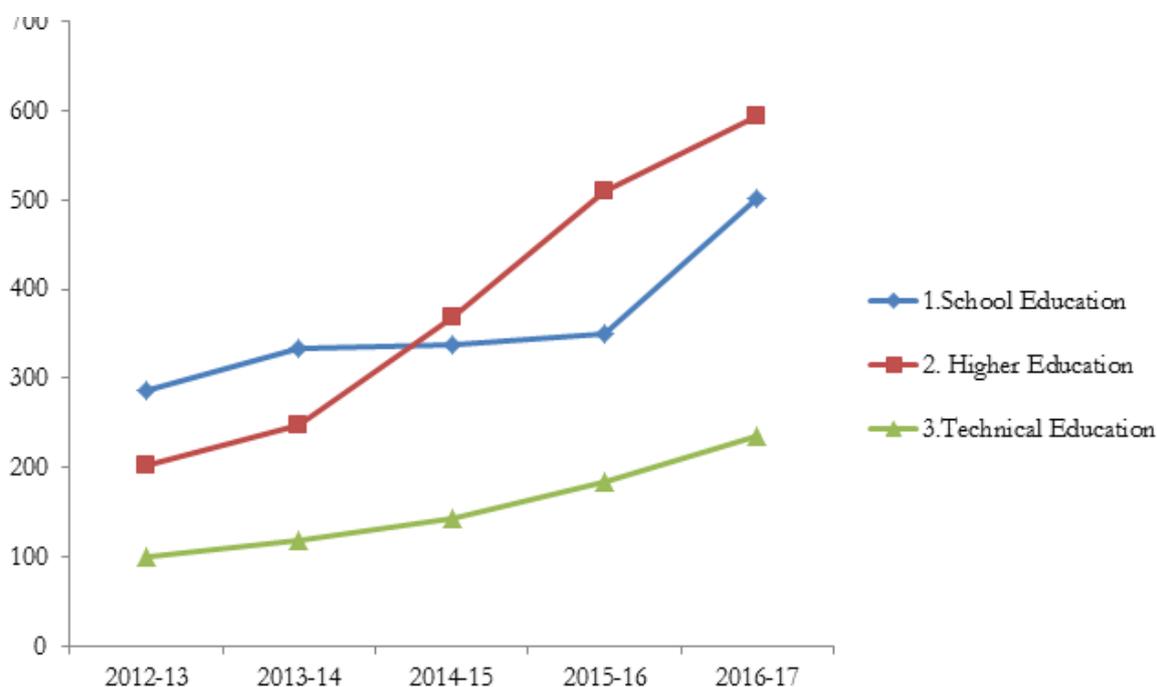
Sector	Annual Plan 2012-13		Annual Plan 2013-14		Annual Plan 2014-15		Annual Plan 2015-16		Annual Plan 2016-17		12th Five Year Plan		
	Outlay	Exp	% of expenditure										
School	287.15	290.6698	333.15	318.5813	367.81	302.3843	379.75	341.6872	502.51	503.4127	1870.37	1756.735	93.92
Higher	202	188.8691	247.99	292.4577	367.97	206.5545	510.42	418.5926	592.81	243.0481	1921.19	1349.522	70.24
Technical	101.09	139.2316	117.86	152.9403	143.22	145.8392	184.45	366.6027	235.41	166.9842	782.03	971.598	124.24
Total	590.24	618.7705	699	763.9793	879	654.778	1074.62	1126.883	1330.73	913.445	4573.59	4077.855	89.16

Source: Plan Documents

8th. It is seen in the report that the indicator of “the percentage of the State Budget earmarked for Education” in Kerala is below the national average. Likewise, clean toilets available for girls are also not up to the mark. Though the methodological validity of the index can be debatable, Kerala’s 8th position in educational ranking raises some critical questions regarding the education system of the State. Many other reports including ASER Report,

Expert Committee Reports of 12th Five-Year Plan and Working Group Reports of 13th Five-Year Plan send out warning signals on the consistent fall in the quality of education in the State and this requires immediate attention and urgent action of the Government.

Figure 4.1.4
Trend of Sector-wise Outlay of Education in 12th Plan (₹ in crore)



Source: Plan Documents

Improvement in health status of the people is one of the crucial areas in social development of a community. This can be achieved by improving the access to health services especially for the underprivileged people. Kerala has achieved a good health status compared to other States in

India. Easy accessibility and coverage of medical care facilities, apart from other social factors such as a high literacy rate, well-functioning public distribution system, less exploitation of the workers due to the presence of workers organisations etc. have played a leading role in influencing the health

EMPLOYMENT

Unemployment Situation in Kerala

The World Employment and Social Outlook Report, 2017 published by International Labour Organisation (ILO) points out that global unemployment levels and rates are expected to remain high in the short term, as the global labour force continues to grow. In particular, the global unemployment rate is expected to rise modestly in 2017 to 5.8 per cent from 5.7 per cent in 2016. Regarding Indian situation, the Report cites that India's economic growth trends are lagging behind employment needs and predicts both rising unemployment and worsening social inequality throughout 2017. Job creation in India is not expected to pick up pace in 2017 and 2018 as unemployment rises slightly, representing a near stagnation in percentage terms. Unemployment in India is projected to increase from 17.7 million in 2016 to 17.8 million in 2017 and 18 million in 2019. In percentage terms, unemployment rate will remain at 3.4 per cent in 2017-18.

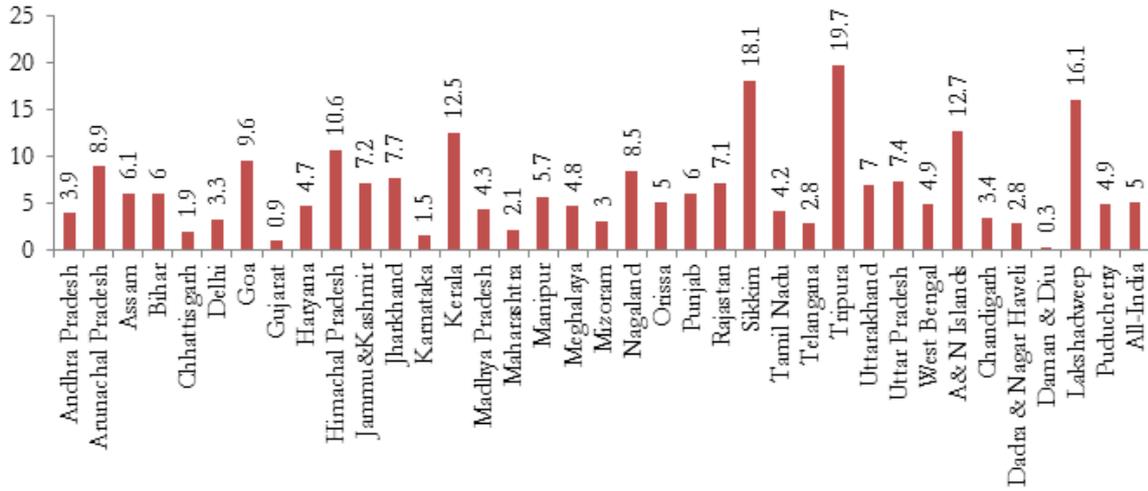
Job creation has been a matter of serious concern in Kerala. This is manifested most notably in a very pronounced incidence of unemployment which is more than two times the all-India average. unemployment retards the economic development of the State and creates social unrest. This problem is more serious among the educated who are unable to utilise their skill and knowledge which they have acquired for effecting qualitative changes in the economy and society. The Government has to frame appropriate policies to utilise the skilled

manpower, which is the most abundant resource in the State.

According to the Fifth 5th Annual Employment-Unemployment Survey 2015-16 conducted by Ministry of Labour and Employment, Government of India, Labour Force Participation Rate (LFPR) at all India level is estimated at 50.3 per cent under Usual Principal Status Approach (UPS). Female's LFPR is significantly lower compared to males. At all India level, female LFPR is 23.7 per cent as compared to 75 per cent for male and 48 per cent for transgenders. Similarly, the Worker Population Ratio (WPR) at all India level is estimated at 47.8 per cent comprising 27.7 per cent females, 72.1 per cent males and 45.9 per cent for transgenders. According to the survey report, among major States Kerala has the highest Unemployment Rate (UR) of 12.5 as against the all India level of 5 per cent (**Appendix 4.1.52** and **Figure 4.1.5**). Among all States, only tiny States of Sikkim and Tripura have a higher unemployment rate than Kerala.

As per UPS approach, the lowest unemployment rate of 0.3 per cent is estimated in Daman and Diu (UT). Among the States, the lowest unemployment rate is estimated in Gujarat (0.9 per cent). The other major States, which have lower UR than the all India average (5 per cent) are Karnataka (1.5 per cent), Chattisgarh (1.9 per cent), Maharashtra (2.1 per cent) Madhya Pradesh (4.3 per cent), Andhra Pradesh (3.9 per cent), Tamil Nadu (4.2 per cent) and West Bengal (4.9 per cent).

Figure 4.1.5
Unemployment Rate of Major States in India
(UPS Approach) (in per cent)

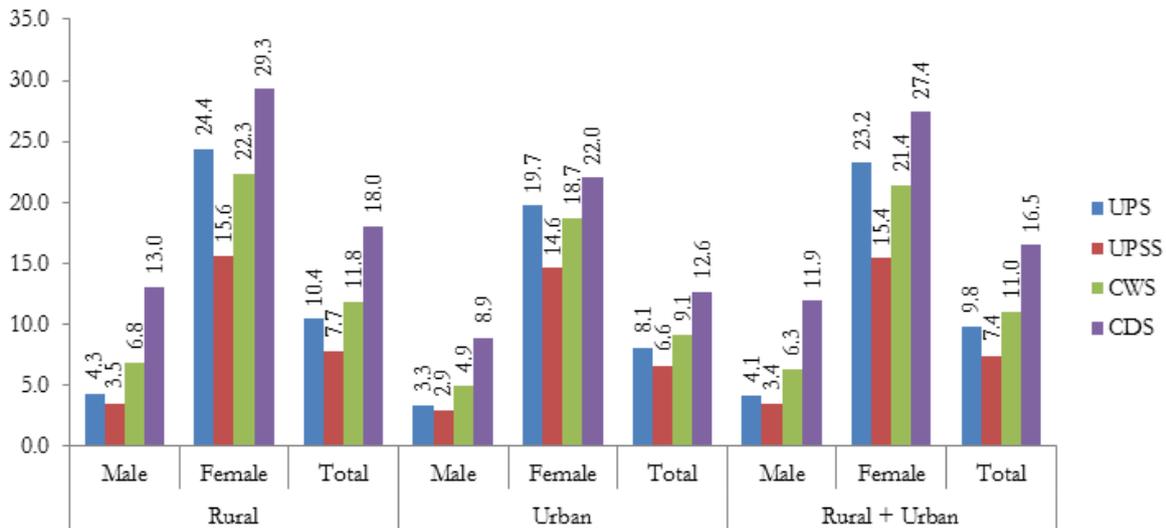


Source: Fifth Annual Employment-Unemployment Survey 2015-16, Government of India.

The unemployment rate, defined as a proportion of the number unemployed to the total labour force (15–60), is measured in terms of usual status, weekly status and daily status. While usual activity status implies regular unemployment, both weekly and daily status represent seasonal/temporary unemployment. **Figure 4.1.6** shows the male and female unemployment rate in Kerala in rural and urban areas as measured by different approaches. In all three approaches, unemployment in Kerala

is found to be generally three to four times greater than the all India average. The unemployment rate of Kerala under UPS approach is 9.8 per cent, which is a more authentic figure as it is prepared with more scientific basis by NSSO. Female unemployment, particularly in rural areas, is a matter of concern in Kerala. However, the female LFPR in Kerala is estimated at 30.8 per cent which is higher than the all India level of 23.7 per cent. Different indicators on employment and

Figure 4.1.6
Unemployment Rate in Kerala Under Different Approaches



Source: Employment and Unemployment Situation in India, NSS 68th Round, July 2011- June 2012 (Age: 15-59 years)

unemployment pertaining to Kerala and India are shown in **Appendices 4.1.53 and 4.1.54**. As per the survey of Employment and Unemployment Situation in India, (NSS 68th Round), area wise data shows that the unemployment rate is higher in rural areas as compared to urban areas (**Figure 4.1.6**).

Productive employment of youth is an essential factor for economic development. In Kerala, the youth accounted for around 23 per cent of the State's population. As per the survey report, the UR among the youth in Kerala is much higher as compared to that of the overall population and it reveals the severity of unemployment problem among the youth in Kerala. The UR of the youth is 21.7 per cent for rural areas and 18.0 per cent for urban areas. Similarly, the UR among the female youth is also much higher than that of the male youth. Area wise UR data shows that 47.4 per cent of female are unemployed in rural area as against the male unemployment rate of 9.7 per cent. (**Figure 4.1.7**). Youth unemployment is prevalent in Kerala because young people lack adequate skills, work experience etc in emerging areas. In order to face the challenges, the ongoing programmes for skill development and employment generation

may be restructured to equip the youth for finding better employment opportunities.

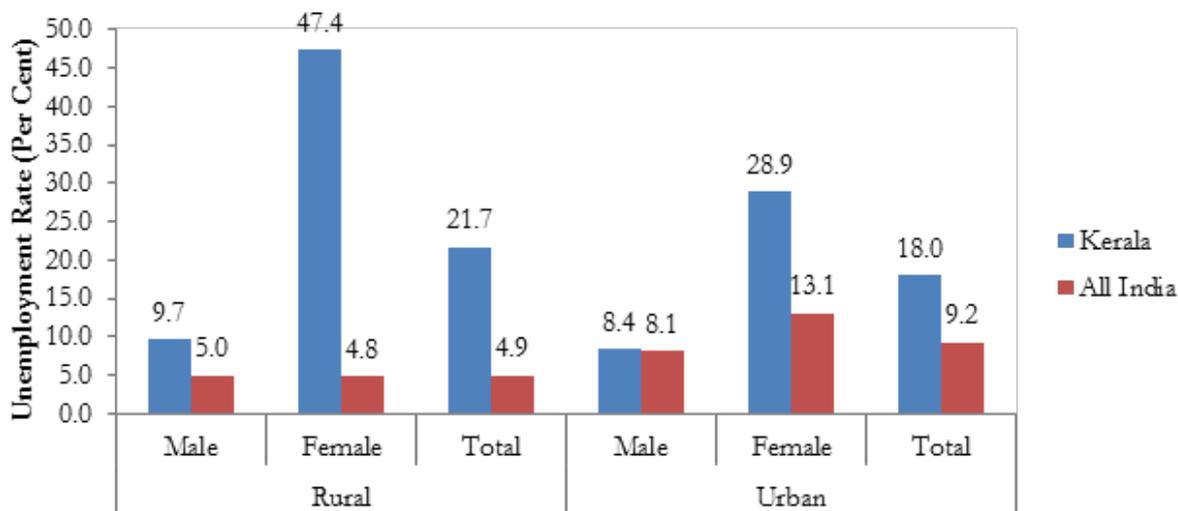
One of the interesting features of Kerala is that women are found to be well educated. However, similar to LFPR, the worker population ratio of females is much lower as compared to that of male. WPRs based on the different approaches for both male and female is presented in **Figure 4.1.8**

Data on age specific WPR (UPSS approach) indicates that in the rural area highest participation of workers was in the age group of 40-44 years (male – 97.8 per cent, female – 47.0 per cent); whereas in the urban area highest participation was in the age group of 35-39 years (male – 96.6 per cent, female – 39.6 per cent). **Figure 4.1.9** gives a diagrammatic presentation of the age specific WPR for the different categories of persons.

Employment in the Organised Sector

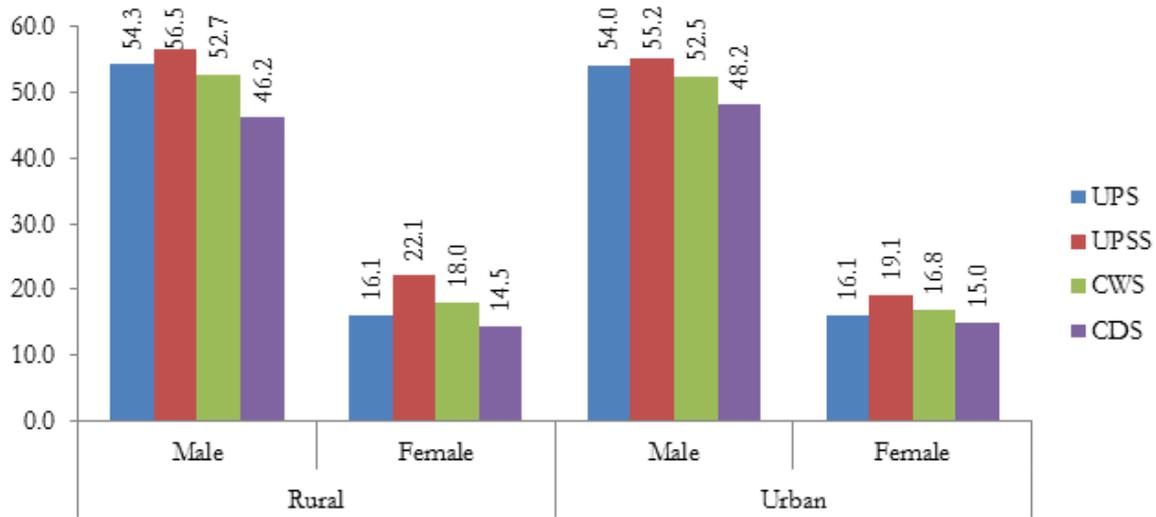
In Kerala, employment in the organised sector has remained more or less stagnant, showing only a marginal increase from 11.15 lakh in 2010 to 11.73 lakh in 2017. The reason behind this trend is due to

Figure 4.1.7
Unemployment Rate of the Youth in Kerala and India as per UPSS Approach



Source: *Employment and Unemployment Situation in India, NSS 68th Round, 2011-2012 (Age: 15-29 years)*

Figure 4.1.8
WPR in Different Approaches in 2011-12 (All Ages)



Source: *Employment and Unemployment Situation in India, NSS Report No. 554 (NSS 68th Round, July 2011- June 2012)*

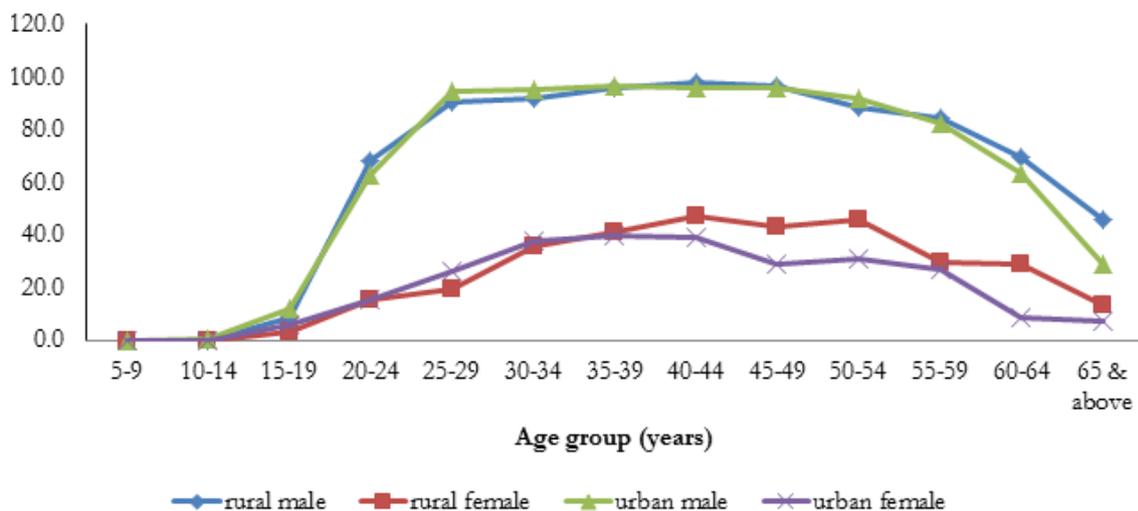
the movement of labour force to the informal sectors like construction, real estate, textiles communication etc, which provides more employment.

The organised sector comprises private and public sectors and it is noteworthy that private sector employment is steadily increasing since 2011 onwards. In 2017, out of 11.73 lakh persons employed in the organised sector 5.60 lakh (48 per

cent) are in the public sector and 6.13 lakh (52 per cent) are in the private sector. (**Appendix 4.1.55 and Figure 4.1.10**).

Within the public sector employment, 46.2 per cent are employed in State Government and 10.5 per cent are in Central Government, 23.7 per cent are in State quasi institutions, 4.6 per

Figure 4.1.9
Age Specific Worker Population Ratio (UPSS) in 2011-12



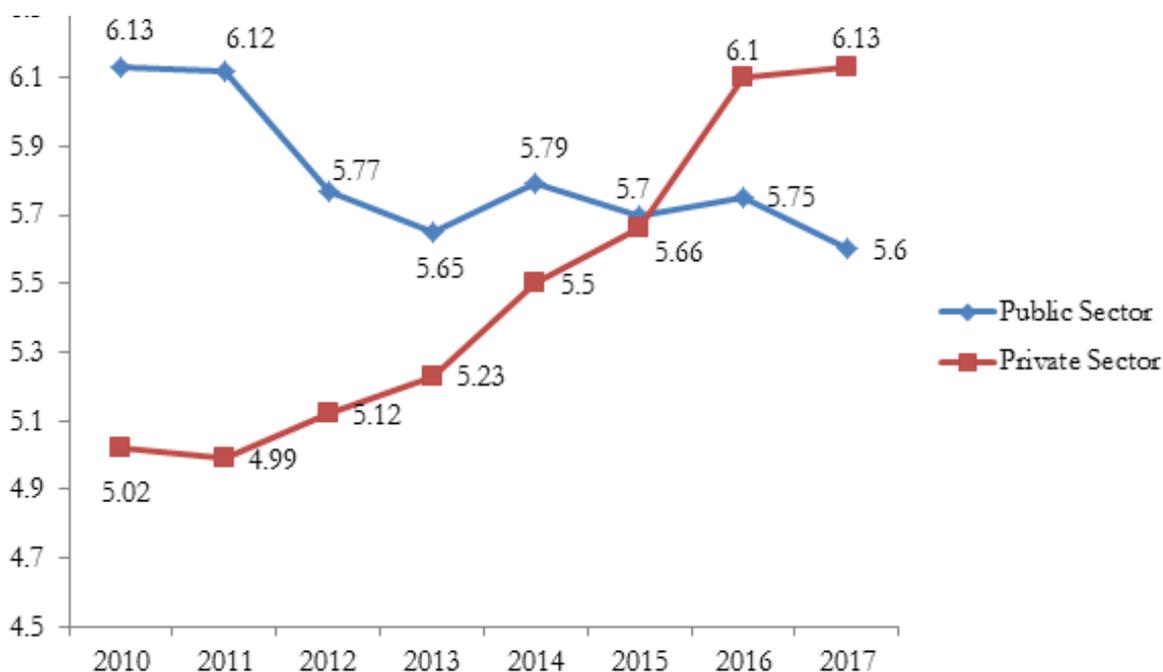
Source: *Employment and Unemployment Situation in India, NSS Report No. 554 (NSS 68th Round, July 2011- June 2012)*

cent in LSGI and 14.8 per cent are in Central quasi institutions. (Figure 4.1.11 and Appendix 4.1.56).

Data on district-wise employment as on March 2017 indicate that Ernakulam and Wayanad are the two districts which respectively accounted for the highest and lowest employment. Total organised sector employment in Ernakulam District is 1.89 lakh persons, which accounted for 16 per cent of the total employment of the State. Whereas in Wayanad, the employment under organised sector is 34,915 persons, which accounted for 3 per cent of the total employment (Appendix 4.1.57). In Kerala, men outnumbered women in public sector employment and women outnumbered men in private sector employment. The share of males in public sector employment is 66 per cent while the share of females in total private sector employment is 52 per cent.

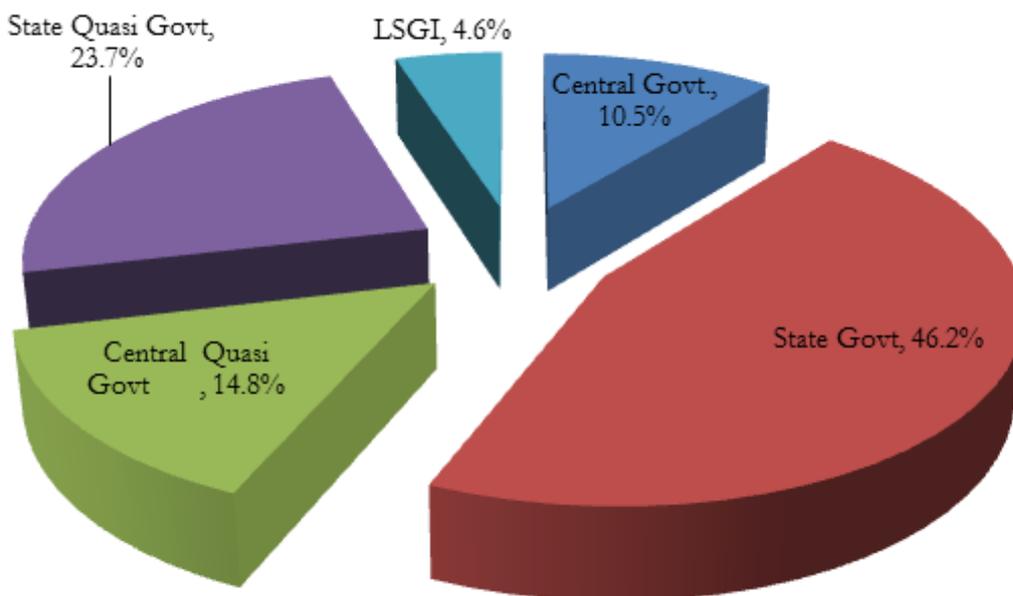
Recent statistics on industry wise distribution of workers in organised sector in Kerala indicates that the dependence on service sector continues to rise whereas the dependence on agriculture continues to decline. Employment in agriculture, relative to other sectors has fallen while the share of employment in manufacturing, education, and financial and insurance activities has risen. (Appendix 4.1.58 and Figure 4.1.12).

Figure 4.1.10
Employment in the Organised Sector- Kerala



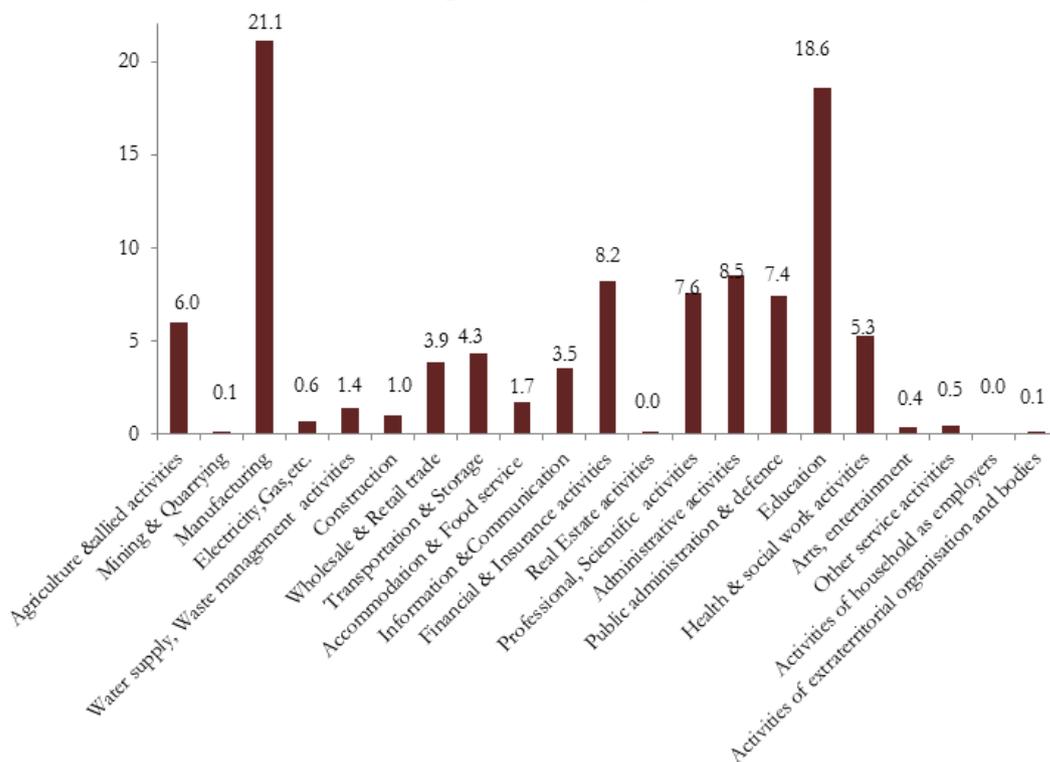
Source: Directorate of Employment, Govt. of Kerala, 2017

Figure 4.1.11
Distribution of Employment in Public Sector



Source: Directorate of Employment, Govt. of Kerala, 2017

Figure 4.1.12
Sectoral Distribution of Employment in Organised Sector- March 2017



Source: Directorate of Employment, Govt. of Kerala, 2017

Employment in Unorganised Sector

Unorganised sector plays a crucial role in Indian economy in terms of employment and its contribution to the Gross Domestic Product, savings and capital formation. More than 90 per cent of workforce and nearly 50 per cent of the Gross Domestic Product are accounted from the sector. A high proportion of socially and economically weaker sections of society are engaged in the unorganised economic activities in India and Kerala. As per the employment and unemployment survey carried out by the NSSO (68th round) based on UPSS approach, it is estimated that self employed workers in Kerala constituted 37.7 per cent of the total workers. Comparatively, the percentage share of regular wage/salaried employee accounted for 22.5 per cent and that of casual labour accounted for 39.8 per cent.

Employees of enterprises belonging to the unorganised sector have lower job security, poorer chances of growth, and no leaves and paid holidays, lower protection against employers and indulgence in unfair or illegal practices. The unorganised workers are subject to exploitation and suffer from poor working conditions especially low wages which are much below that in the formal sector, even for closely comparable jobs. In Kerala, Directorate of Employment is the nodal department entrusted with the responsibility

to take measures to reduce instances of unfair practices existing in the unorganised sector. In recent years the Kerala government has initiated several measures to provide social security to workers in the unorganised sector.

Skill and Unemployment

In Kerala rate of unemployment (persons who are unemployed as a percentage of Labour force) is noticeably higher for persons with university education than the rest. One fourth of post graduates in labour force are unemployed while one sixth of persons with technical degree and one sixth of persons with vocational training are unemployed (**Table 4.1.9**)

Employment Exchanges and their Services Registered Job Seekers

According to live register of employment exchanges in Kerala, the total number of job seekers as on December 31, 2012 was 44.99 lakh. But it has now declined to 36.83 lakh as on October 31, 2017, a reduction of about 8.16 lakh. Details of job seekers for various years are given in **Appendix 4.1.59**.

Contrary to the all India scenario, women job seekers are found to be more in the live registers in Kerala. Of the total job seekers, 60 per cent are women. Number of illiterate persons in the live register is 1291.

Table 4.1.9
Rate of Unemployment by Skill (Age 15 years and above) in Kerala, in per cent

General Education	Rate of Unemployment	Vocational Training	Rate of Unemployment
Not Literate	4.6	Formal	14.9
Just Literate	4.1	Informal	3.5
Primary	2.4	No Training	9.7
Middle	4.1	Graduate	16.2
Secondary	10.2	Diploma	20.3
Higher Secondary	18.8	Post Graduate Diploma	25.7
Graduate	20.0	No Qualification	7.7
Post Graduate	23.3		

Source: Computed from unit records of NSS 68th Round

Distribution of job seekers by educational level indicates that only 10 per cent have qualification below SSLC. About 62 per cent of the job seekers are in the category of qualifications having SSLC. (Appendix 4.1.60).

The number of professional and technical job seekers as on June 30, 2017 is 1.85 lakh. Data reveals that ITI certificate holders and Diploma holders in Engineering together constitute 97 per cent of the total professional and technical job seekers. There are 35,541 registered engineering graduates (Appendix 4.1.61).

A significant and peculiar feature of Kerala is that women outnumbered men who seek employment through employment exchanges. The district-wise job seekers in Kerala is shown in Figure 4.1.13.

Thiruvananthapuram District ranks first in the number of job seekers in general and professional/technical categories as on June 30, 2017. The total number of job seekers in Thiruvananthapuram district is 5.19 lakh, of which 3.11 lakh are women and 2.07 lakh men. The second largest number of job seekers is in Kollam district with 4.16

lakh persons. The lowest number of job seekers registered in Wayanad district with 96,262 persons, followed by Kasargode District with 97,355 persons. (Appendix 4.1.62). The Department has initiated a separate scheme called Kaivalya, for the differently abled candidate registered in Employment Exchange (Box 4.1.7).

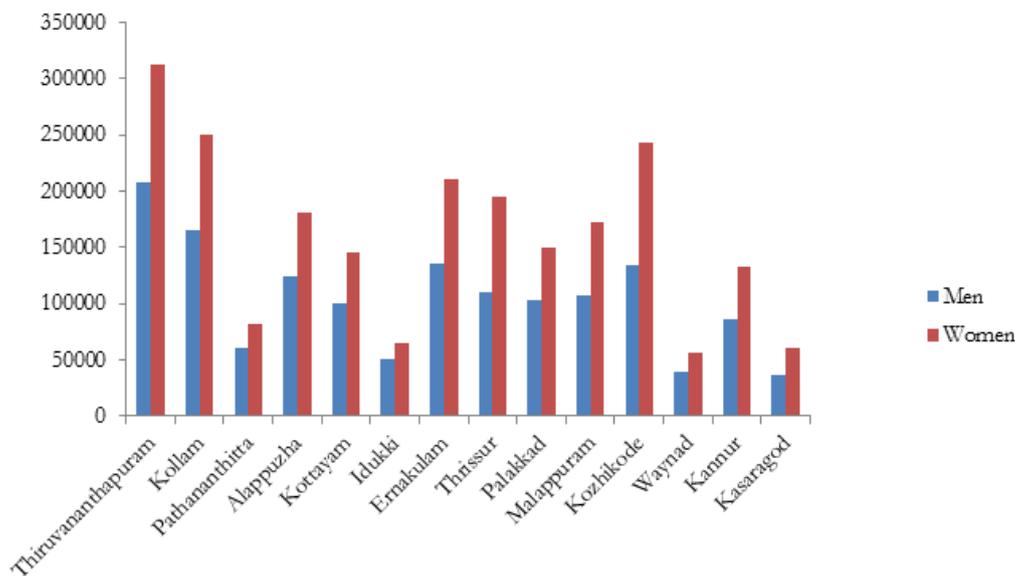
Self Employment Schemes Implemented through Employment Exchanges

Three self employment schemes are implemented through the Employment Exchanges in Kerala.

1. Kerala Self Employment Scheme for the Registered Unemployed' (KESRU) – KESRU

is being implemented since 1999 and is intended for unemployed persons in the live register between the age 21 to 50 years with annual family income not exceeding ₹1 lakh. Preference will be given to those with professional or technical qualifications, graduate women and beneficiaries of unemployment dole scheme. Bank loan up to ₹1.00 lakh with a 20 per cent subsidy is given for

Figure 4.1.13
Job Seekers in Kerala as on 30-06-2017
(Status of Men and Women)



Source: Directorate of Employment, Govt. of Kerala, 2017

Box 4.1.7**Kaivalya**

Kaivalya is a comprehensive employment rehabilitation programme introduced by Employment department of Kerala Government from November, 2016 for the upliftment of differently abled candidates who are the registrants of Employment Exchanges. The primary objective of the scheme is to create a social and physical environment favouring accessibility, integration and full participation of persons with disabilities. It comprises the following 4 components;

1. Vocational Guidance
2. Capacity Building
3. Training for Competitive Examinations
4. Self Employment Ventures

An amount of ₹168.00 lakh was spent in 2016-17 for implementing the above activities benefitting 505 persons. In 2017-18, an amount of ₹100 lakh has been sanctioned for 803 beneficiaries selected out of 4,111 applicants.

self employment ventures. In 2016-17, an amount of ₹1.33 crore was allotted to 720 beneficiaries.

2. Multi-Purpose Service Centers/Job Clubs (MPSC/JC) – This is a group oriented self-employment scheme for development of enterprises in the unorganised sector. Bank loan up to ₹10 lakh with a maximum of ₹2 lakh as subsidy is given for starting self-employment group ventures of 2 to 5 members, who are unemployed persons in the live registers in the age group of 21-45 years. The scheme is incorporated with Credit Guarantee Scheme. In 2016-17, an amount of ₹1 crore was allotted to 62 Job Clubs.

3. Saranya – Saranya is an employment scheme for the destitute women for uplifting the most backward and segregated women in the State, namely widows, divorced, deserted, spinsters above the age of 30 and unwed mothers of Scheduled Tribe. Under this scheme, interest free bank loan upto ₹50,000 with a 50 per cent subsidy (maximum ₹25,000) is given for starting self-employment ventures. In 2016-17, an amount of ₹16.00 crore was allotted to 3,200 beneficiaries.

Unemployment Assistance

Government of Kerala had introduced an unemployment assistance scheme in 1982. Under the scheme, unemployed youths remaining in the live registers for over three years (for physically challenged two years) after attaining the age of 18 and having passed SSLC (For SC/ST and physically challenged, candidate need to have only appeared for SSLC examination) and having annual family income below ₹12,000 and personal income below ₹100 per month are eligible for an unemployment assistance of ₹120 per month up to the age of 35 years of age. With the enactment of the Kerala Panchayat Raj Act and Kerala Municipality Act, the unemployment assistance scheme was transferred to Rural and Urban Local Governments since 1998. Under the scheme, the eligible candidates shall submit their application for unemployment allowance in the prescribed form to the local government. The Welfare Standing Committee at the Local Governments may finalise the list of candidates based on the eligibility criteria. In the current year (as on October 2017), an amount of ₹21.58 crore was disbursed to 193,071 beneficiaries as unemployment assistance and ₹24 crore to 5,280 beneficiaries as self employment assistance.

Box 4.1.8 Niyukthi – 2017

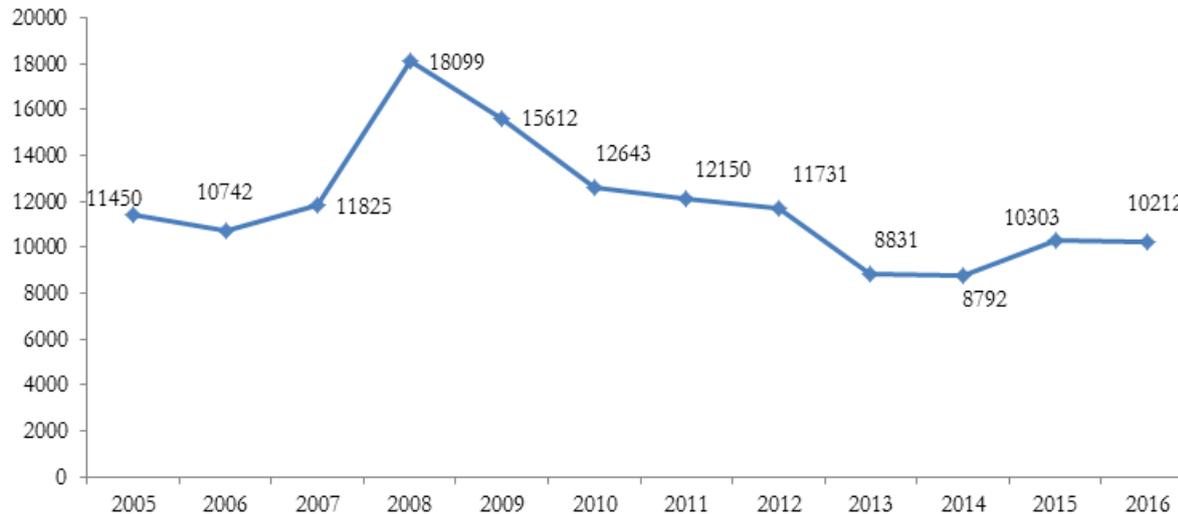
Niyukthi is a standalone mega recruitment drive organised by the National Employment Service department with a view to providing employment opportunities to the educated and talented unemployed youth in the private sector. Niyukthi 2017 was organised in Thiruvananthapuram, Ernakulam and Kozhikkode in the months of January and February 2017. In this mega event, 24,824 job seekers and 252 employers participated. Out of 17,641 vacancies reported, 6,817 jobs were offered and 333 placements were provided.

Placement through Employment Exchanges in Kerala

The placement through Employment Exchanges in Kerala has been declining since 2010. Total placement has declined from 12,643 in 2010 to

10,212 in 2016 and further to 5,437 as on June 30, 2017. Reduction in placement may be due to temporary posts either being filled up on daily wage/contract basis or being kept vacant. The placement through employment exchanges in Kerala since 2010 is illustrated in the **Figure 4.1.14**.

Figure 4.1.14
Placement through Employment Exchanges-Kerala



Source: Directorate of Employment, Govt. of Kerala, 2017

SKILL DEVELOPMENT

Kerala's growth rate has consistently remained higher than the national average over most of the last two decades. This improvement was encouraged by a preceding transformation in the structure of the economy, leading to a larger service sector based economy. This is a very distinct transformation from the agrarian economy of the early 20th century. It is largely visible in the structure of employment, with over 72 per cent of the urban male workforce and 68 per cent of urban female workforce engaged in services (NSS, 2009-10). Corresponding rates for rural males and females are 57 per cent and 38 per cent respectively. However, structural transformations of the economy have not been sufficient for the large number of employment opportunities in emerging sectors. The Government aims to create a skilled and technically qualified workforce who contribute to the growth and development of both State and nation, while providing quality training to all possible people so as to reduce unemployment as well as achieve the national goal of 500 million skilled persons by 2022. Based on the population of increasing matriculates passing out in Kerala, 1.5 to 2 lakh skilled manpower per year has to be trained annually to reach the national target.

Recent years have seen improvement in Kerala's skill development regime. But the existing capacity of skill training institutions in Kerala still falls below the international standard. With the objective of skilling the young workforce of Kerala and elevating their skills to global standards for employment in India and abroad, the Government of Kerala has set up Kerala Academy for Skills Excellence (KASE), a non-profit company as the nodal agency for facilitating and coordinating various skill development initiatives of the State. Another initiative is the Additional Skill Acquisition Programme (ASAP). ASAP aims at imparting industry-specific job skills that enhance the employability of the beneficiaries through vital areas of communication. Students of higher secondary and undergraduate levels seeking immediate employment are the major stake holders

of the programme. Establishment of Community Skill Parks is a notable recent initiative of ASAP. The programme aims at opening a community skill park in each legislative constituency in the State. Additional Skill Enhancement Programme (ASEP) has been developed for the students of ITIs and Registrants of Employment Exchanges. Along with this, a Modular Employable Skill Programme is also being run with the support of vocational training providers in the State.

Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY) is a centrally sponsored skill development programme implemented through National Rural Livelihood Mission (NRLM). The programme aims at diversifying sources of income for rural families, thereby also adding diversity to the career aspirations of rural youth. This is a programme focusing on rural youth between the ages of 15 and 35 years. Kudumbashree is the nodal agency for implementing this programme in Kerala. The scheme links up industries as training providers across different trades. Students are placed with the industries with a view to gain industrial assimilation.

Craftsman Training

Industrial Training Department implements Craftsman Training Scheme to ensure a steady flow of skilled workers in different trades to the domestic industry. There are 87 Government ITIs, one Basic Training Centre, one Staff Training Institute, Two Advanced Vocational Training Scheme, 486 private ITIs and 44 ITIs under Scheduled Caste Development Department exclusively for SC and 2 ITIs under Scheduled Tribe Development Department, exclusively for ST students functioning in the State. There are about 85 trades with allocated seats for Craftsman Training with a total seating capacity of 97,038. The details of ITIs and its trade and enrolment are given in **Appendices 4.1.63, 4.1.64 4.1.65, 4.1.66 4.1.67, 4.1.68 and 4.1.69.**

Apprenticeship Training

The Apprenticeship Training scheme is conducted as per Apprentices Act, 1961, which was enacted with the objective to regulate the programme of training of apprentices in the industry so as to conform to standard syllabi, periods of training and skill sets etc while utilising the facilities available in industries for imparting practical training. This scheme aims to meet the requirements of skilled manpower for the industry. Apprenticeship is a contract between an apprentice and an employer to provide training in a particular skill in an establishment for a particular period and also to provide a stipend stipulated as per the Apprentices Act. The Central/State Government acts as the third party in contract regulating and monitoring the process. It was enacted with the purpose of utilising the facilities available in industries for Skill training and certification by the National Council for Vocational Training (NCVT). Trade

Apprenticeship training in Kerala is both a Central and State Initiative. Apprenticeship schemes in the State are implemented through Related Instruction centres in nine districts and ITIs in the remaining five districts.

There are 81 trades in which 10,422 seats have been allocated for Apprenticeship Training, of which around 4,328 seats are filled. Around 2,000 trainees are certified every year under this scheme. Government sector accounts for more than 50 per cent of apprenticeship placements in the State.

Skill Development Initiative Scheme

Skill Development Initiative Scheme aims to give free training in Modular Employable Skill courses (MES) to early school leavers and existing workers, especially in unorganised sectors for employable

Box 4.1.9

Major Recommendations of the Working Group on Skill Development for the 13th Five-Year Plan

- Skill development initiatives are spread across different departments and ministries under various programs and policies. Hence there are issues of duplication and a lack of coordination being reported across the State. This calls for a coordinating secretariat which will coordinate the different programmes addressing the same skill area or same target group. The centre will also function as the skill forecasting system in the State and advise respective departments on their skill-specific requirements.
- Creating a network of all training institutes in the State with inter-sectoral linkages.
- All the government. ITIs in the State are to be transformed to Excellent Skill Development Centres, at par with international training institutes.
- Faculty Development Centre with special focus on skilling is essential.
- Collaborate with industry bodies to develop skill assessment tools to ascertain skill gaps and training needs.
- Skill mapping of different domains in the State.
- Study the profile of returning emigrants in terms of education/skill attainment and occupational profile.
- Apart from skilling new entrants into the workforce, it is also important to equip the existing workforce with relevant skills based on evolving needs of the industry.
- The overall engagement of the local industries in Kerala with the Sector Skill Councils can be enhanced.
- Preparation of skill Skill Development policy. Formulating and implementing Kerala State Skills Plan (SSP) and holding an international seminar titled 'Emerging Skills, Kerala' to prepare the SSP.

Box 4.1.10

Innovative Steps of Industrial Training Department

Virtual Class System

This is one of the pioneering developments in the State. e-learning programmes have been implemented through a virtual class system. This was recognised by the State government and the department was awarded third prize in e-governance programme. Virtual class system has been provided in 34 ITIs all over the State with three systems in each ITIs – two in theory class and one in practical hall.

3 Dimension (3D) Interactive Teaching Aid

The department has developed 3D interactive visual teaching aid to optimise the use of 3D visuals in training.

- 3D Interactive interactive teaching aid has been developed in Automobile Mechanic, Engineering Drawing, Draughts man Civil and Electrician, Fitter, Turner, Machinist and Mechanic motor vehicle trade.
- The entire programme is interactive and visually rich to enable the instructor to actively involve the class and increase the attention of the student in the learning program.
- 3D interactive teaching aid facilitates an in depth understanding of theory and practical.

ISO Certification

The ISO Certified ITIs are Quality has been the hallmark of our Industrial Training Institutes. Various innovative techniques are introduced in trainings. The target is to ensure result oriented performance by our institutes. These initiatives of the department are recognised by awarding ISO certification to 24 “ITIs”.

ISO Certified it is are listed below

The ISO certified ITIS are ITI (W) Kozhikode, ITI Ettumanoor, ITI Mala, ITI (W) Kalamassery, ITI Kozhikode, ITI Kalpetta, ITI Kannur, ITI (W) Kazhakkuttom, ITI Attingal, ITI Chnneerkkara, ITI Kalamassery, ITI (W) Chalakudy, ITI Areacode, ITI Chengannur, Dhanuvachapuram, Chackai, Kollam Kollam (W), Pallickathode, Kattppana, Chalakkudy, Malampuzha, Kannur (W), Kasaragode.

Bio-Metric Attendance System

To ensure quality service to the stake holders and in maintain a disciplined work force, a biometric attendance system has been introduced to in the department. Trainees were also brought under the system to create a pool of disciplined professionals.

Digital File Management System

With the vision of creating a paperless office with timely action and better service, the Department implemented a digital file management system in the Directorate of the department.

Development of Websites for “ITIs”

The Department has developed websites for separate sections of the government. This is in accordance with the guide lines of DGE&T. It provides information about the institutes, courses, admission details, faculty, services, specialties, consultancy and future plans.

skills. Existing skills of a potential employee can also be tested and certified through this scheme. Successful trainees will be issued certificates by the National Council for Vocational Training. The Department of Industrial Training is the authority for implementing and monitoring training in the Skill Development Initiative Scheme in Kerala.

Skill Updating Institute for Staff Training (SUIIT)

Skill Updating Institute for Staff Training, Kerala was started in 1999 at Kazhakkuttom, Thiruvananthapuram to update the technical

knowledge of Instructional Staff and others to keep up with technical developments. The activities of this institute include preparing course designs, researching new teaching methods, updating the skills of technical staff, soft skill training, training programmes under State Training Policy at IMG, off campus training programmes, monitoring virtual class training, coordinating Distance Learning Programme training of DGE&T.

Kerala Academy for Skills Excellence (KASE)

KASE is a Section-25 company fully owned by government of Kerala. The objective of the company is to facilitate mass human resource development through specialised skill development courses across the State. The participation of

leading public and private industries is envisaged in the domains of construction, retail, finance, IT and ITES, tourism, hospitality etc. The main purpose of the academy is to spearhead the creation of highly skilled and safe professional workers, for all levels of work across the industry, through objectively designed specialisation courses for various categories of workers. Training will be imparted to sharpen both technical and soft skills. To be at par with international standards, workers need to be trained in soft skills like communication skills, language skills, safety and environment awareness etc., which are currently lacking in our work force as well as in professional course graduates passing out from various colleges. It aims at imparting both theoretical and practical training of skill sets needed for each category – from supervision to labour.

Box 4.1.11 Milestones in 2016-17

- The initiatives of the department were recognised by awarding ISO certification to 10 ITIs. which They are Dhanuvachapuram, Chackai, Kollam, Kollam (W), Pallickathode, Kattappana, Chalakudy, Malampuzha, Kannur (W), Kasaragode.
- Department has implemented a digital file management system to encourage paperless office with timely action and better service.
- Nutrition programme has been started. Egg and milk are supplied to the trainees of all Government ITIs.
- Noon meal programme was started in the ITI Attappady, Nilambur Aryanadu.
- Job Fair was conducted in March 2017 in three regions to facilitates placement for ITI passed outs and around 2,800 trainees have been enlisted.
- Department has taken action to upgrade 10 ITIs into international standard through KIIFB Funding. The selected ITIs are ITI Dhanuvachapuram, ITI Kollam, ITI Chegannor, ITI Ettumjnoor, ITI Kattapana, ITI Chalakkudy, ITI Malampuzha, ITI Koyilandi, ITI Kannur, and ITI Kayyur. KASE was the SPV which was entrusted to prepare DPR for the project.
- Placement cell were formed in all ITIs and 1,642 trainees got placement up to March 2017.
- Entrepreneurship Development Club were constituted in all ITIs in the State with the help of District Industries Centre to inculcate entrepreneurial culture among youth and equip them with skills and techniques to act as torch bearers of enterprise for the new generation.

AGEING

Ageing is a series of process that begins with life and continues throughout the life cycle. It presents both challenges and opportunities. Elderly or old age consists of ages nearing or surpassing the average life span of human beings. The boundary of old age cannot be defined exactly because it does not have the same meaning in all societies. According to the Indian law, a senior citizen means any person being a citizen of India, who has attained the age of sixty years or above.

Demographic Transition in Kerala

Demographic transition is a change from high fertility and mortality to low fertility and mortality. The indications of this transition are reflected in the current demographic trends of Kerala. The notable achievements made by the State in the demographic variables have raised concerns also. The change in fertility and mortality rate has brought significant changes in the age composition of the population. The demographic trend shows that Kerala is currently passing through the most critical stage of demographic transition as a result of fertility and mortality changes, particularly steep in the 70s and 80s and the consequent age structural transition. One of the important consequences of the demographic transition is population aging. The term aging of a population refers to a relative increase in the number of aged persons. It is evident that changes in fertility and mortality have brought positive changes in the number of older persons. The move in the age composition in favour of old age has implications on Kerala's socio-economic situation.

Status in India and Kerala

In traditional Indian culture and social arrangements, the social security system provided

for families was prevalent; the elders were respected and obeyed in their household, neighbourhood, and community. However, this has almost eroded with the emergent nuclear family with very poor arrangements for taking care of the old. This is accentuated by the fact that a large number of the able bodied and young have gone out for jobs (especially to Gulf Countries), leaving the old to fend for themselves. Also, many of the women who were traditionally the care givers in the family are also now working and need to combine outside work with care of the elderly.

The traditional social arrangement is seen to be slowly deteriorating in both urban and rural settings. According to Population Census 2011, there are nearly 10.4 crore elderly persons (aged 60 years or above) in India; 5.3 crore females and 5.1 crore males. Both the share and size of elderly population is increasing over time. From 5.6 per cent in 1961, the proportion has increased to 8.6 per cent in 2011. For males, it was marginally lower at 8.2 per cent, while for females it was 9.0 per cent. As regards rural and urban areas, 71 per cent of elderly population resides in rural areas while 29 per cent is in urban areas. The life expectancy at birth during 2009-13 was 69.3 for females as against 65.8 years for males.

Kerala is aging faster than the rest of India. Its 60 plus population, 5.1 per cent of the total in 1961, was just below the national 5.6 per cent. Since 1980, Kerala has overtaken the rest and the 2001 comparison is 10.5 per cent to 7.5; by 2011, almost 13 per cent of the population is already past 60 years. According to a study (Centre for Development Studies, 2013 "A survey on ageing scenario in Kerala"), the State's elderly population is growing at a perpetual rate of 2.3 per cent. The growth rate is high among the elderly aged

70 or 80 and above. Currently 42 lakh people of Kerala are 60 and above; 13 per cent of them are 80 years and over, the fastest growing group among the old. Women outnumber men among the 60 plus and among them, majority are widows. Kerala has got the highest life expectancy at birth. The life expectancy at birth in Kerala is 71.8 years and 77.8 years for males and females respectively as per the SRS Report 2009-13. Generally, life expectancy among women is higher than men (for all-India also); however, it is much higher in Kerala and men marry women a few years younger which explains the high proportion of widows among the old. NSS Survey 2015 on morbidity indicates that 65 per cent old are morbid.

In Kerala, the culture of sending elderly persons to Old Age Home is fast developing. Majority of old age people in Kerala are widows. In 1991, among the old age people in the range of 60-69, 53.8 per cent are widows and among those above 70 years it comes to 69.20 per cent. By 2025, about 20 per cent of our population would

be elderly and the demand on the social security system would be really enormous. So, it is very important to remember that social security to the senior citizens is not charity instead it is their basic human right. The age composition of Kerala's Senior Citizens is given in **Table 4.1.10**.

The marital status of Kerala's Senior Citizens is given in **Table 4.1.11**.

The total figures for currently married is misleading because among the currently married which is 60.8 per cent persons, men constitute 88.9 per cent and women only 37.8 per cent. This means that for an overwhelming majority of men (88.9 per cent) their wives are alive at older ages while for only 37.8 per cent women, their husbands are living. Men marry wives several years younger and when they enter 60, their wives will be much younger (may be in their late fifties). Thus, at 80, while only 17 per cent men are widowed, as many as 84.2 per cent women are widowed (not shown in the **Table 4.1.11**).

Table 4.1.10
Age Composition of Senior Citizens in Kerala (in numbers)

Age composition	Total	Men	Women
Total population	33,406,061	16,027,412	17,378,649
Total old age population	4,193,393	1,853,595	2,309,798
60-69	2,416,805 (58%)	1,114,368 (60%)	1,272,437 (55%)
70-79	1,234,739 (29%)	534,879 (29%)	699,860 (30%)
80+	541,849 (13%)	204,348 (11%)	337,501 (15%)

Source: Census of India, 2011

Table 4.1.11
Marital Status of Kerala's Senior Citizens

	Total	Men	Women
Never married	2.6	1.8	3.3
Currently married	60.8	88.9	37.8
Widowed	35.7	8.8	57.0
Others	0.9	0.5	1.9
Without partner	39.2	11.1	62.2

Source: Census of India, 2011

Kerala Disability Census 2015

Senior Citizens as per Census 2011 in Kerala are 41,93,393. However in 2015, according to the disability survey there were 8,217,434 households with a population of 34,254,086 of which senior family members is 4,233,474 constituting 12.36 per cent of total family members. There were 1,934,758 male and 2,298,716 female senior members. Most common disability among the aged persons was loco motor disability and visual disability as per Census 2011. Persons suffering from Alzheimer have numbered 35041. In Kerala, number of senior citizens having disabilities and living in institutions is 4,260 of which 2,352 is female and 1908 is male. In this, 80 plus population constitute 570 numbers. Number of households where all members are Senior members was 432,953 which is 5.27 per cent of total families/households. The number of senior female members is 2,298,716 which is 54.3 per cent and the number of senior male members is 1,934,758 which is 45.7 per cent.

Increasing Old Age Dependency

The ratio of the dependent population to that of the working age population is defined as the dependency ratio and is an important indicator of the economic burden carried by each worker. Old age dependency is the ratio of persons aged 60 years and above to the working age population. The 'Old' Dependency Ratio of India as per 2011 census is 142 and in Kerala it is 196 due to higher life expectancy at birth. The old age dependency ratio shows an increasing trend in Kerala and is highest among Indian States (Elderly in India 2016, Ministry of Statistics and Programme Implementation, GOI). The dependency ratio increases, implies obviously that the proportion of elderly in the total population increases as a proportion to the working population.

Senior Citizens as Experienced Human Resource

The retirement age for the State Government service is 56 years and in most of the public sector

undertakings it is 60. Ageing lowers working life of persons. In Kerala, the retired Government staff get pension which helps them to lead a comfortable life. Committed deployment of this experienced manpower has the potential to enhance production. Elderly when employed meaningfully and kept busy, tend to live healthier and longer. Employment keeps the elderly busy, entertained as well as providing them with the feeling of social relevance. But for those people who have no such job or other unorganised sector workers, there is no pension and retirement. Some category of the people get only a nominal amount as pension and it will not help even to cover their medical requirements. In developed countries, the social security system is very strong and therefore not much to worry for them in the old age.

Nutritional Considerations for the Elderly

The number of individuals aged 60 years or older is escalating and too often this is also a group most vulnerable to many health risks from a nutrient poor diet. A significant number of elderly fail to get the amount and types of food necessary to meet essential energy and nutrient needs. Ageing population in developing countries is currently facing malnutrition due to social and demographic changes and at the same time it is being observed that their diets are becoming higher in fats, animal products, refined foods and are low in fiber, contributing to rapidly increasing prevalence of obesity and type 2 diabetes. Dietary interventions in the elderly are therefore particularly challenging, because of the paucity of data on which accurate recommendations for age related changes in nutrient requirements could be based.

Health

There is no one who would not grow old. Every being on the earth inevitably follows the cycle, determined by nature that takes him/her through multi-phases of childhood, adolescence, adulthood and maturity. Each stage has its own strength, its set of responsibilities and its particular problems. Generally, with the advancement

of age, the entire scenario undergoes a drastic change. Responsibilities are passed on to the next generation and the potency slowly fades out-giving rise to a monotony and dullness, leading gradually to a complicated set of problems that hinder effectiveness. These problems are what precisely cast a dooming effect on the health of an individual.

Kerala is considered to have the best health care system in India. But Kerala is also known for its highest morbidity. The 71st Round of National Sample Survey on Morbidity (January to June 2015) shows that while a total of 89 persons out of 1,000 persons surveyed reported ill during a 15 days period of survey all over India, the number reported from Kerala was 310 out of 1,000. Among the 60+ this was 276 for India and 646 for Kerala. Kerala has the largest incidence of Non Communicable Diseases (NCDs) in India. The State is considered to be the diabetes capital of India. The Registrar General of India's Report on Medical Certification of Cause of Death 2013 shows that while in India only 3 per cent people died due to diabetes in 2013, it was 10.2 per cent for Kerala. The cases of hypertension and cardio

vascular diseases are not different. These may be treated as the factors reducing life span and affecting quality of life. While these are general problems affecting all age groups in Kerala, it disproportionately affects the old who are a more vulnerable group in matters of health.

Government's Role in Welfare of Aged

Since independence, the Government has been committed to supporting the old people in our society with certain interventionist welfare methods. The year 1999 was declared by the UN as the International Year of Older Persons. The Government of India approved the National Policy for Older Persons on January 13, 1999 to accelerate welfare measures and empower the elderly in ways beneficial to them. Maintenance and Welfare of Parents and Senior Citizens Act, 2007 provides legal sanctions to the rights of the elderly. In addition constitutional provisions for old age security, old age pension, establishing old age homes, expanding geriatric services, liberalising housing policy for elders have also been undertaken.

Box 4.1.12

Major recommendations of the 13th Plan Working Group Report on Social protection of Senior citizens

- Day care centres should be opened for the older citizens
- Formation of Senior Citizens' Department
- A State Commission for the Protection and Welfare of senior citizens
- State Council and District Councils on senior citizens
- Prevent abuse of the elderly through strengthening the implementation of Maintenance and Welfare of Parents and Senior Citizens Act 2007. The Panchayaths and Social Justice Department should sponsor senior citizen's clubs or Vayojana Sabhas at the local level which could effectively keep vigil on abuse.
- Welfare fund for senior citizens
- All senior citizens belonging to BPL category should be covered by a free and comprehensive health insurance scheme
- All public places, buildings and utilities which are frequented by senior citizens should be made elder friendly and should have barrier free access to them

State Old Age Policy 2013

Kerala was one of the earlier States to have introduced a policy for senior citizens. The first policy document emerged in 2006. Later, Government reviewed the Old Age Policy 2006 and came out with a new State Old Age Policy 2013. The aim of the policy was to ensure maximum welfare facilities to all aged people in the State. The State government will register police case against those who exploit the age old.

National Policy on Senior Citizens 2011

National policy recognizes the rich experience of old persons and hence rightly considers them as important human resource, assures dignified life in their last phase, assures physical and financial security, health care, shelter and acknowledges the need for affirmative action by the government, especially for the elder women and rural poor. The policy envisaged State support to ensure financial and food security, health care, shelter and other needs of older persons, equitable share in development, protection against abuse and exploitation, and availability of services to improve the quality of life.

The Maintenance and Welfare of Parents and Senior Citizens Act, 2007

The Maintenance and Welfare of Parents and Senior Citizens Act, 2007 was enacted in December 2007, inter alia, to ensure need based maintenance for parents and senior citizens and their welfare. The Act provides for Maintenance of Parents/senior citizens by children/relatives made obligatory and justiciable through Tribunals, Revocation of transfer of property by senior citizens in case of negligence by relatives, Penal provision for abandonment of senior citizens, Establishment of Old Age Homes for Indigent Senior Citizens, Protection of life and property of senior citizens, Adequate medical facilities for Senior Citizens etc.

Kerala Maintenance and Welfare of Senior Citizens Rules 2008

Under these Rules the senior citizens or parents who are unable to maintain himself/herself apply for maintenance to the Maintenance Tribunal. The Revenue Divisional Officer (RDO) is appointed as Presiding Officers of Maintenance Tribunal under the Act for each Sub-division. District Collectors are appointed as Presiding Officers of Appellate Tribunal for each District. District Welfare Officers are designated as Maintenance Officers for each District.

Ministry of Social Justice and Empowerment

The Ministry of Social Justice and Empowerment, as the name suggests, is to ensure equitable treatment to such sections of society which suffer social inequalities, exploitation, discrimination and injustice. The Social Defense Division of the Ministry mainly caters to the requirements of Senior Citizens, besides victims of alcoholism and substance abuse, Transgender Persons and Beggars/Destitute. The Ministry develops and implements Acts, Policies and Programmes for welfare of Senior Citizens in collaboration with State Governments/Union Territory Administrations to ensure that Senior Citizens may lead a secured, dignified and productive life.

Vayoshreshtha Samman Award for the Aged

October 1st every year is celebrated all over the world as International Day of the Elderly and as part of this Ministry of Social Justice and Empowerment has been celebrating the occasion every year by organizing a series of programmes and facilitating distinguished senior citizens, organizations and Panchayaths with the Vayoshreshtha Samman. This is to recognize the services rendered by the older senior citizens, to sensitize the society about the problems and needs of the older persons and to reiterate the

Government's commitment towards the cause of the elderly. Total of 10 awards are given therein for various categories. Institutions which study about problems of old age, Associations providing welfare services to old age, people above 90 years of age who continue social work, especially among the old age, best mothers who tried hard to bring up their children to a secure position, brave old age people, old age people who got national/international awards in field of cultural activities, best Panchayats working for welfare of old age, old age people working in the field of sports, and old age people working for economic prosperity, can apply for concerned awards.

Social Security Schemes for Elderly

The policies and programs for the old age people aim at their welfare and maintenance, especially for senior citizens, by supporting old-age homes, day care centers, mobile medical care units, etc.

Rashtriya Vayoshri Yojana – A Central Scheme for Providing Physical Aids and Assisted Living Devices to Senior Citizens

This Central Government scheme provides physical aids and assisted living devices for such senior citizens suffering from age related disabilities/infirmities, who belong to BPL category. The Scheme aims to address following types of disability/infirmity low vision, hearing impairment, loss of teeth and locomotor disability. Types of physical aids and assisted-living devices to be provided under the scheme are walking sticks, elbow crutches, walkers/crutches, tripods/quadpods, spectacles, hearing aids, artificial dentures and, wheelchair, etc.

Integrated Programme for Older Persons – A Central Sector Scheme to Improve the Quality of Life of the Older Persons

The main objective of the scheme is to improve the quality of life of the older persons by providing

basic amenities like shelter, food, medical care and entertainment opportunities and by encouraging productive and active ageing through providing support to Government/Non-Governmental Organizations/Panchayati Raj Institutions/local bodies and the Community at large. Assistance under the scheme will be given to the Panchayati Raj Institutions/local bodies and eligible Non-Governmental Voluntary Organizations.

Schemes of the State Government

Age Friendly Panchayat

The age friendly Panchayat implemented by Social Justice Department of Kerala is a new initiative associated with State Old Age Policy, 2013. Converting all the Panchayats in the State into age-friendly Panchayats for ensuring good health, participation and assuring quality of life to the Senior Citizens is the objective of the programme.

Vayomithram

Kerala Social Security Mission is implementing the Vayomithram project which provides health care and support to elderly above the age of 65 years residing at Corporation/Municipal Areas in the State. The Vayomithram project mainly provides free medicines through mobile clinics, palliative care and help desk to the old age. The project is implemented as a joint initiative with LSGD in the area (Municipality/Corporation). Vayomithram provides medicines free of cost by conducting mobile clinics in ward basis in the area. There are no economic criteria for availing the service. Each mobile unit comprises Medical Officer, Staff Nurse and Junior Public Health Nurse. Palliative care service is provided for the bed ridden patients in the project area. Special trained nurses and JPHN's are available for the service. Vayomithram co-ordinators provide help desk service to the needy old age in the area. The old age can avail help from the vayomithram office. In addition to this special medical camp, special entertainment programmes

like Sallapam, Snehayathra were conducted mainly for the destitute in old age home and Vayomithram beneficiaries., Sponsorship programmes were conducted with the help of NGOs as also special day programmes., Counseling service was provided by Vayomithram co-ordinators with reference of doctors from mobile clinics and active involvement of Vayomithram in social issues related to old age in the area. Kerala Social Security Mission is implementing this programme in 6 Municipal Corporations and 70 Municipalities of all the 14 districts. In the financial year 2016-17, 38 new Vayomithram units have been started in Municipalities across the State. In 2016-17, the number of beneficiaries was 175,865.

Vayo Amrutham

Evolution of finite health care protocols had added years to life thus resulting in increased old age population. The nuclear family in the present society has paved the way to a larger number of old age homes. Old age people are very often forced to be isolated from nuclear families. The old age population then has to live in social isolation along with physical and mental health problems. The Social Justice Department with the support of Indian System of Medicine department has implemented this new initiative in 15 old age homes for the treatment of inmates who are suffering from health problems. Majority of cases treated are in health ailments like diabetes, asthma, skin diseases, arthritis, eye and ear diseases, etc. Health care also includes palliative care for bedridden and counseling. As part of this scheme, Ayurvedic treatment is being provided to the inmates belonging to all the government old age homes functioning under Social Justice Department. The inmate will be provided with the service of a medical officer and an attender.

Mandahasam

Mandahasam is an initiative by Social Justice Department for giving free tooth set for the senior

citizens. The scheme aims to reduce nutritional, physical and mental problems faced by the elderly people after losing their teeth. The department would prepare a list of dental colleges and dental treatment centres from where the beneficiaries could avail treatment. It would also ensure the quality of artificial tooth and quality treatment by setting standards and norms. Senior citizens who fall in BPL category would be eligible for the benefit under this scheme. One beneficiary would get maximum financial assistance of ₹5,000 for fixing the teeth.

Sayamprabha Home – Comprehensive Scheme for Senior Citizens

Sayamprabha Home project is a new initiative of Social Justice Department that provides day care facilities in co-operation with LSGD institutions. These day care centres will provide the most required services and help on a barrier free platform in their age of need. These day care facilities will offer an opportunity for the senior citizens to mingle with their own age group and provide solace to elderly who suffer loneliness during daytime. As an initial phase 70 such day care centres have been identified by LSGD institutions which will provide counseling programmes and yoga meditation programmes to the Senior Citizens.

Assistance to Local Self Government Institutions to Start Old Age Homes and Day Care Centers

As part of implementing State's Old Age Policy, the Government has proposed to support Local Self Governments for starting old age homes/ day care centres by providing ₹2 lakh for each institution for meeting the administrative expenses. The running of Institution will be entrusted to Kudumbasree and LSG will provide infrastructure and maintenance. For this purpose, concerned local bodies will constitute a Monitoring Committee. The Department will provide the recurring expenditure as per the approved norms. The role

of LSG in this Plan is to provide land and building, infrastructure, day-to-day maintenance and identify and engage local Kudumbasree members for the functioning of the home.

Old Age Home and Day Care Centre

These institutions are maintained for the care and protection of senior citizens having nobody to look after. The persons seeking admission in these institutions shall submit their application to the Superintendent of the institution. Confirmation of the admission shall be made after getting the enquiry report of the District Probation Officer. Total number of such old age home is 15 and sanctioned bed strength is 1125.

National Old Age Pension Scheme

The Indira Gandhi National Old Age Pension Scheme (IGNOAPS) is a non-contributory old age pension scheme that covers Indians who are 60 years and above and live below the poverty line. All individuals above the age of 60 who live below the poverty line are eligible to apply for IGNOAPS. All IGNOAPS beneficiaries aged 60–79 receive a monthly pension of ₹1,100. Those 80 years and above receive a monthly pension amount of ₹1,500. As a part of decentralisation through the Indian Constitutional Amendment Act 1993, the implementation of Indira Gandhi National Old age pension, which was handled by the Revenue Department of State Government, has been transferred to Local Self Government Institutions. At present the local bodies have been entrusted with the task of receiving the application, processing, granting and distribution of the pension.

Reservation in Public Transport System

Ministry of Shipping, Road Transport and Highways provides reservation of two seats for senior citizens in front row of the buses of the State Road Transport Undertakings. A person of 65 years and above is eligible for reservation of two seats in State buses in Kerala. The Ministry of Railways provides separate ticket counters for

senior citizens at various Passenger Reservation System centres if the average demand per shift is more than 120 tickets. Besides this, there is also provision of lower berth to male passengers of 60 years and above and female passengers of 45 years and above, 40 per cent and 50 per cent concession in rail fare for male passengers aged 60 years and above and female passengers aged 58 years and above respectively and wheel chairs at stations for old age passengers.

Outlook

Kerala today has a very large population of old people. These demographic shifts are taking place alongside many other rapid social and economic changes that are transforming the lives of older people. In this scenario it is necessary to re-look at all the policy formulations and its implementation with a practical approach keeping in mind the needs and rights of old people. In coming years the major challenge before the State is provision of employment opportunities, social security and pension for the aged.

4.2 HEALTH AND SANITATION

MEDICAL AND PUBLIC HEALTH

Improvement in health status of the people is one of the crucial areas in social development of a community. This can be achieved by improving the access to health services especially for the underprivileged people. Kerala has achieved a good health status compared to other States in India. Easy accessibility and coverage of medical care facilities, apart from other social factors such as a high literacy rate, well-functioning public distribution system, less exploitation of the workers due to the presence of workers organisations etc. have played a leading role in influencing the health system in Kerala. The Peoples Campaign for Decentralised Planning initiated in 1996 helped improve infrastructure and service in primary and secondary healthcare institutions and widened healthcare delivery. In Kerala, both modern medicine and AYUSH systems play a crucial role in providing universal access and availability to the poorer sections of society.

Kerala has made significant gains in health indices such as high life expectancy, low infant mortality rate, birth rate, and death rate, etc. The State must ensure that it sustains the gains achieved. Further, the State is also facing problems of Life Style Diseases (Non Communicable Diseases) like Diabetes, Hypertension, Coronary Heart Disease, Cancer and geriatric problems. Increasing incidences of Communicable Diseases like Chikungunya, Dengue, Leptospirosis, Swine Flu etc. are also major concerns. Other than these, there are new threats to the health scenario of the State, like mental health problems, suicide, substance abuse and alcoholism, adolescent health issues and rising number of road traffic accidents. The health status of the marginalised communities like adivasis, fisher folk etc. is also poor compared to the general population. To tackle these, concerted

and committed efforts with proper inter sectoral co-ordination is essential.

Health Indicators of Kerala

Comparative figures of major health and demographic indicators at State and National level are given in **Table 4.2.1**.

Working Groups on Health Sector for 13th Five-Year Plan

The State Planning Board had constituted separate Working Groups for Medical and Public Health and Ayush for the 13th Five-Year Plan Period. The Working Groups identified priority areas in health sector for the 13th Five-Year Plan and the reports have been submitted and published. The recommendations of the Committee are being incorporated in the schemes of the health sector.

Major Recommendations of Working Group

I. Ayush

Indian Systems of Medicine (ISM)

- Developing ISM institutions to Indian Public. Health/Kerala Accreditation Standards for Hospital standards.
- Providing Specialty service in district and taluk hospitals.
- Formation of Ayurveda tourism consortium to tap tourism potency of Ayurveda.

Directorate of Ayurveda Medical Education (DAME)

- Develop Government Ayurveda college hospitals as tertiary specialty care centres.
- Establish New Ayurveda colleges.

- Establish State Research Institute for revalidating Ayurveda to evidence based medicine.
- Implement e-Health programme
- Develop HOMCO (The Kerala State Homoeopathic Co-operative Pharmacy Ltd).
- Establish Drug Control Wing for Homoeopathy.

Homoeopathy

- Implement e-Health programme.
- Establish Directorate of Homoeopathic Medical Education.

Table 4.2.1
Demographic, Socio-economic and Health Profile of Kerala as Compared to India

Sl. No.	Indicators	Kerala	India
	Total population (in crore) (Census 2011)	3.34	121.06
	Decadal Growth (%) (Census 2011)	4.90	17.7
	Sex Ratio (Census 2011)	1084	943
	Child Sex Ratio (Census 2011)	964	919
1	Birth Rate #	14.3	20.4
2	Death Rate #	7.6	6.4
	Male	8.5	6.8
	Female	6.7	5.9
3	Natural Growth Rate #	6.8	14
4	Infant Mortality Rate #	10	34
	Male	9	33
	Female	11	36
5	Neo Natal Mortality Rate*	6.00	25.00
6	Perinatal Mortality Rate*	9.00	23.00
7	Child Mortality Rate*	3.00	10.00
8	Under 5 mortality Rate*	13.00	43.00
9	Early Neo-natal Mortality Rate*	4.00	19.00
10	Late Neo-natal Mortality Rate*	2.00	6.00
11	Post Neo-natal Mortality Rate*	6.00	12.00
12	Death Rate*		
	(a) Children (0-4)	2.9	13.4
	(b) Children (5-14)	0.3	0.7
	(c) Children (15-49)	2.60	3.10
	(d) persons (60 and above)	35.4	42.3
	(e)Percentage of death receiving medical attention*		
	Government	41.3	27.5
	Private	35.3	16.9
	Qualified professional	16.4	34.9
	Untrained/others	7.1	20.7

13	Still Birth Rate*		5	4
14	Total Fertility Rate*		1.80	2.30
15	General Fertility Rate*		53.00	76.2
16	Total Marital Fertility Rate*		4	4.6
17	Gross Reproduction Rate*		0.9	1.1
18	Female age at effective marriage##			
	(a) Below 18		16.70	16.30
	(b) 18-20		19.20	19.00
	(c) Above 21		24.40	23.90
	(d) All age		24.40	20.70
19	Couple Protection Rate		62.30	52.00
20	Maternal Mortality Ratio**		61.00	167.00
21	Expectancy of Life at Birth***		74.9	67.9
		Male	72	66.4
		Female	77.8	69.6

Source: # SRS 2017, September* SRS Statistical Report 2015 ## SRS 2009

Special Bulletin on MMR 2011-13*SRS Life Table 2010-14

II. Medical and Public Health

- Implement Aardram Mission
- Develop Primary Health Centres into Family Health Centres
- Standardisation of the District and Taluk Level hospitals
- Implement e-Health programme to create centralised database of healthcare information and for close monitoring of public health problems and for speedy implementation of control measures
- Establish Public Health Cadre
- Implement a Human Resource Development Planning in health sector for the State

Approach for the 13th Five-Year Plan

- Provide the best possible preventive, curative, and palliative care in the public sector.
 - Expand insurance coverage.
 - Achieve total sanitation, waste disposal and mosquito eradication.

- Improve infrastructure in public sector.
- Make Aardram Mission a success by
 - Making Primary Health Centres as Family Health Centres.
 - Providing quality treatment services at secondary level.
 - Creating a Patient Friendly Environment in government hospitals.
- Promote study and research in different branches of Ayurveda.

Aardram Mission

Government has identified 170 PHCs covering all 14 districts for developing into Family Health Centers in 2017-18. Additional posts of one Medical Officer, two staff nurses and one lab technicians each were created and postings were done with the result that there will be a minimum of 3 doctors and 4 nurses in the Primary Health Centres. 29 Family Health Centres are already inaugurated and made functional and another 26 is ready for inauguration. Transformation of the PHCs into Family Health Centers is very well

accepted by the society and the community response is found to be very encouraging. Service delivery of these institutions in terms of clinical care and public health activities have been augmented and outpatient care is provided in the afternoon upto 6.00 PM. Through the implementation of e-Health project it is expected to further develop individual patient care Plan and family health Plan based on family health register data. Registration procedure for e-Health services has already been initiated. Ward and Panchayath level health Plan focusing on preventive, promotive and rehabilitative health care services would be developed in association with Panchayaths and with public participation. A new health volunteer system called Arogyasena is being launched as part of Aardram mission. Public health interventions focusing on the reorganisation of the primary health care system based on the epidemiological needs of the Kerala society especially of non-communicable diseases is a focus area of the programme. Treatment guidelines for 53 common medical conditions to be managed at

PHC level have been prepared and made available for Medical Officers. Revised job responsibilities and Family Health Care transformation guidelines have already been prepared and module based trainings have been initiated for major categories of staff.

Considering the fact that medical college hospitals and district level hospitals are larger institutions providing outpatient care for so many thousands of patients every day, patient friendly transformation of the outpatient wings of these hospitals were taken as a priority item under Aardram Mission. Outpatient transformation with adequate OP registration counter, patient waiting area, adequate seating facility, token system with other patient amenities like drinking water, toilet facilities, public address system, information education and communication arrangements and signage systems are being incorporated. Support of patient care coordinators for larger institutions on a temporary basis would also be provided. For ensuring quality

Box 4.2.1 Aardram Mission

The Aardram Mission has been launched in the health sector to make Government hospitals people-friendly by improving their basic infrastructure and services. Many of the government hospitals are overcrowded with patients. Government hospitals can be made people-friendly to a large extent by ensuring quality health care with minimal waiting time for outpatient medical checkup and other investigation facilities. This would also enable to provide adequate attention to inpatient services. Aardram Mission will be implemented in three stages in Government Medical College Hospitals, District Hospitals and Taluk Hospitals and Primary Health Centres. By converting Primary Health Centres as Family Health Centres with adequate supply of drugs and assured treatment protocols will ensure better health among people and enhance their trust in the public health system. The mission aims to improve the efficiency of service and facilities in the government hospitals with a view to extend treatment at a reasonable cost, time and satisfaction. Following are the major objectives of the mission.

1. Patient friendly transformation of the outpatient (OP) wings of medical college hospitals and other Government hospitals.
2. Standardisation of the District level and Taluk level hospitals.
3. Developing the Primary Health Centres into Family Health Centres in a phased manner.
4. Ensuring protocol based treatment guidelines in the management of patients in hospitals.

medical care, OP computerisation, providing adequate facilities in the consultation rooms and a guideline based case management are planned. Civil modification works have been initiated in Government medical college hospitals and work will be started soon at district level hospitals.

e-Health Project

The e-Health Project targets to link health institutions all over Kerala. The project aims to build a database of individual medical records easily accessible to the medical practitioners. It includes unique patient identification in different settings and exchange of data between different health care delivery units at primary, secondary and tertiary level across State. This could avoid the repeated medical tests and can thereby reduce rush in clinics and labs and out of pocket expenses. The scheme is envisaged to be implemented in seven districts of Kerala with Thiruvananthapuram as the pilot district.

National Health Policy 2017

India has drafted the National Health Policy twice, once in 1983 and in 2002, which has guided the approach towards the health sector in Five-Year Plans. Fourteen years later, a revised National Health Policy has been formulated in 2017. It addresses the issues of universal health coverage, reduction in maternal mortality and infant mortality, access to free drugs and diagnosis and changes in laws to make them more relevant. The primary aim of the National Health Policy, 2017, is to strengthen and prioritise the role of the Government in shaping health systems in all its dimensions—investments in health, organisation of healthcare services, prevention of diseases and promotion of good health through cross sectoral actions, access to technologies, developing human resources, encouraging medical pluralism, building knowledge base, developing better financial protection strategies, strengthening regulation and health assurance. Salient features of the National Health Policy 2017 are;

- Increase health expenditure by Government

from the existing 1.15 per cent of GDP to 2.5 per cent of GDP by 2025.

- Increase State sector health spending to more than 8 per cent of their budget by 2020.
- Decrease in proportion of households facing catastrophic health expenditure by 25 per cent, by 2025.
- Ensure District-level electronic database of information on health system components by 2020.
- Strengthen the health surveillance system and establish registries for diseases of public health importance by 2020.
- Increase Life Expectancy at birth from 67.5 to 70 by 2025.
- Reduce under-five Mortality to 23 by 2025 and MMR from current levels to 100 by 2020.
- Reduce infant mortality rate to 28 by 2019.
- Reduce neo-natal mortality to 16 and still birth rate to single digit by 2025.
- Increase utilisation of public health facilities by 50 per cent from current levels by 2025.
- More than 90 per cent of the newborn are fully immunised by one year of age by 2025.
- Relative reduction in prevalence of current tobacco use by 15 per cent by 2020 and 30 per cent by 2025.

State Health Policy

The Government constituted a 17-member panel headed by Dr B Ekbal, Member, State Planning Board to draft a new health policy for the State. The Committee held sittings in different districts to get the opinions and suggestions from the common man regarding their needs in the health sector and held consultations with all the experts, professionals and people who are closely associated with the health sector before finalising the draft. The committee laid emphasis on strengthening the primary health sector of the State which would play a pivotal role in detection of the diseases and the need for strengthening disease surveillance at the grass root level to prevent the spreading of epidemics. Apart from strengthening the treatment

facilities, the committee looked into the need for giving thrust for disease prevention. The policy envisages establishing a publicly funded, free, universal and comprehensive health care system, bringing infant, child and maternal mortality to levels in developed countries and to increase the healthy life expectancy of the population. The draft report is submitted to the government for further action.

Sustainable Development Goal: Targets Set by Kerala

The Government of Kerala has declared the short and medium term targets to be achieved by the State in the health sector. The Sustainable Development Goals (SDG) Framework specifically SDG no. 3, set by the United Nations, was chosen as the reference frame for these goals so that targets finalised by Kerala would be aligned to national and international targets. Targets announced by the UN were examined by the Working Groups for their relevance to the State and were adapted to suit the State's current epidemiological status and capacity. In addition to the targets listed in the UN documents, Kerala has included targets in Dental, Ophthalmic and Palliative care as they were considered important in the State. The working groups also recommended key strategies to achieve these targets. A survey will evaluate the performance of the State in 2021 to assess the baseline values against which to measure progress towards achievement of the targets.

Health Sector Financing During Plan Periods

Health has been a major area of allocation in the State Budget in the past years. Government healthcare expenditure has been showing a steady increase in recent years. Even then, Kerala invests less than five per cent of its total State Plan outlay on health care excluding the contribution of LSG and other line Departments. The outlay earmarked for the implementation of schemes during 12th Five-Year Plan was ₹331,888.00 lakh

(BE). The total expenditure reported during the Plan period was ₹300,600.50 lakh (90.57 per cent). During the first year of 13th Five-Year Plan (2017-18), ₹131,495 lakh had been allotted for Health Sector. Of which 26.88 per cent was expended upto September 2017. Department-wise Plan outlay and expenditure during the last four Annual Plan period and total outlay and expenditure upto September 2017 (2017-18) is given in **Table 4.2.2**.

Major Health Problems in Kerala

Communicable Diseases

Kerala is witnessing an increasing burden of communicable and non-communicable diseases. Although the State has been successful in controlling a number of communicable diseases earlier, the emergence of Dengue, Chikungunya, Leptospirosis, Malaria, Hepatitis, H1N1, in recent years has led to considerable morbidity and mortality. Instances of vector borne diseases like Dengue, Malaria, Japanese encephalitis, scrub typhus etc. have seen a marked increase in many districts. Water borne infections like different kinds of diarrhoeal diseases, Typhoid and Hepatitis are showing persistence in many districts. Cholera has surfaced in many districts after few years of relative low incidence. Vaccine preventable diseases like diphtheria and whooping cough are yet to be eliminated despite years of effort. Deaths due to many of these diseases are now drawing attention of national and international organisations to our State, which once was considered a model for many national programs.

Dengue

Dengue fever, which surfaced in Kerala as early as 1998, has now become the single largest cause of vector borne diseases. Till 2015, the disease was more prevalent in districts like Thiruvananthapuram, Kollam, Kottayam, Pathanamthitta, Kozhikode and Malappuram. But in 2017, all the Districts reported Dengue in large numbers. No District was spared. Districts located

Table 4.2.2
Department-wise Outlay and Expenditure, ₹ in lakh

Department	Annual Plan 2013-14		Annual Plan 2014-15		Annual Plan 2015-16		Annual Plan 2016-17		Annual Plan 2017-18 (Exp. Upto September)	
	Outlay	% Expenditure	Outlay	% Expenditure	Outlay	% Expenditure.	Outlay	% Expenditure	Outlay	% Expenditure
Directorate of Health Services	24530	97.67	29693	78.90	32216	67.86	52174	113.30	72402	36.15
Directorate of Medical Education	22665	93.85	25750	97.40	26699	89.69	39388	77.56	47009	15.31
Indian Systems of Medicine	2330	95.11	2545	78.15	2670	93.85	3412	94.06	4320	25.10
Directorate of Ayurveda Medical Education	2300	94.04	2567	84.10	2567	94.60	3364	55.50	4600	4.20
Directorate of Homocopathy	1475	61.80	1440	88.76	1440	91.26	1983	76.26	2300	28.35
Homoeco Medical Education	800	90.50	945	97.60	945	93.78	990	24.30	864	59.13
Total	54100	94.72	62940	87.76	66537	79.65	101311	95.24	131495	26.88

Source: Planspace

at higher altitudes were having low prevalence, but all others showed high incidence. The main reason for this wide spread distribution is believed to be due to the changes in the environmental factors causing proliferation of the Dengue vector- Aedes mosquitoes. These mosquitos, which in the earlier days were seen more in rural settings has now spread to both rural and urban areas. The underlying causes for this spread are changes in human behaviour, clubbed with changes in bionomics of the mosquito and climatic changes.

Leptospirosis

Leptospirosis is another emerging public health challenge faced by the State. Considered as a rare disease in the early 80's, it has now spread to all districts. In 2012-13 a major epidemic of the disease occurred, affecting most of the northern districts, following which the disease has become endemic in Kerala. The disease is initially a rodent borne

infection, spread through urine of the infected rodents, and the consequent contamination of the environment is the factor responsible for the disease. Over the years, the disease has been reported in many domestic animals like cows, dogs, pigs etc. and thus has become an occupational risk for those engaged in agriculture works. People, who have been involved in cleaning of stagnant canals and drains were reported to have contracted the disease. More recently the mortality due to Leptospirosis is also on the rise, and joint efforts of Veterinary and Animal Husbandry departments are essential for effective control of this disease.

Out of the 510 Leptospirosis cases reported in 2012, 11 deaths were reported. The number of cases increased to 613 with 15 deaths during 2013. During 2014, a total of 717 cases were confirmed resulting in 19 deaths. In 2015, there were 666 cases and 15 deaths reported. Number of patients treated in 2016-17 was 967 and death reported was 25 which are slightly higher compared to previous

years. Total number of cases reported in 2017-18 (up to July 2017) was 848 and death reported was 11. The details of district wise patients treated for leptospirosis and death reported during 2016-17 and 2017-18 (up to July 2017) are given in the **Appendix 4.2.1.**

Chikungunya

Chikungunya is a newcomer among the vector borne infections. This disease believed to have originated in the remote islands in Arabian Sea during 2005-06 period, spread rapidly over whole of Kerala within the next two years, affecting more than 80 per cent of our population. Fortunately, the disease is fading out, and has resulted in life long immunity for the affected population, a blessing in disguise. The past two years have seen only sporadic cases in Kerala, annual total being less than 200 cases and no deaths. Here again the vector responsible for disease transmission is the *Aedes* mosquitoes. Since both dengue and chikungunya are transmitted by same mosquito, and also since the same mosquitoes are responsible for transmission of the potential threat of Zika virus disease and Yellow fever, the State should be vigilant in future.

In 2011, while 58 chikungunya cases were reported in Kerala, it increased to 169 cases during 2013. Among the districts, highest number of cases was reported in Thiruvananthapuram (149) and lowest in Idukki (11). In 2014, out of the 139 cases of Chikungunya reported, 106 were from Thiruvananthapuram. In 2015, 104 cases were reported and 99 were from Thiruvananthapuram district alone, while it was 90 and 67 respectively during 2016-17. It was 63 and 48 respectively during 2017-18. A total of 2,046,455 viral fever cases were reported in Kerala in 2014, 1,925,690 cases in 2015, 1,541,441 cases in 2016-17, and 2,149,204 in 2017-18.

The details of district wise patients treated for Chikungunya and viral fever in 2016-17 and 2017-18 (up to July) are given in **Appendix 4.2.2.**

Malaria

Malaria, another vector borne disease, transmitted by *Anopheles* mosquitoes has been a public health challenge for our country for the past many decades. Various national programmes targeting its elimination was met with limited success. Though Kerala eliminated the disease in early 70s, Malaria is now re-emerging as a public health challenge. The problem is recently aggravated due to the presence of large scale population movement from malaria endemic States. Proportion of *Falciparum* Malaria, the more severe form of the disease is also slowly on the rise in Kerala. Though elimination of indigenous form of Malaria has been included in the SDG targets by the State, the issues in its fulfillment are many. Rapid urbanisation, extensive infrastructure development in many districts, uncontrolled construction works in urban area, and climate related changes in life cycle of mosquitoes are all big hurdles in the attainment of the SDG goal. Annual cases of Malaria in Kerala are less than 2000 and deaths reported are also very low, but the major issue here is the increase in foci of indigenous Malaria. Thiruvananthapuram, Kollam, Kozhikode, Malappuram, and Kannur districts have pockets of indigenous Malaria over the past few years. Kasargod district is persistently having high number of Malaria, over many years, because of its proximity to the highly endemic districts of Karnataka. Movement of fishermen along the western coast of our State is a potential threat for spread of Malaria along the coastal Districts.

Japanese Encephalitis

This is a form of encephalitis, an inflammatory disease of brain and its coverings, and is also a mosquito borne infection. Due to the presence of large paddy fields, Kerala is also at risk of this disease, as the virus responsible for the disease is spread by *Culex* mosquitos, which are bred abundantly in water logged areas like paddy fields. The peculiar nature of the *Culex* mosquito to breed in contaminated water also, increases the potential threat in other areas as well. Role of migratory birds in transmission of Japanese Encephalitis

(JE) is an extra risk for Kerala, because our State has many attractive sanctuaries for migratory birds. But since there is an effective vaccine against JE, we can be optimistic in its control programme, by strengthening the JE vaccination.

Water-Borne Diseases

There was a decrease in acute diarrhoeal diseases (ADD) in 2017 compared to previous years. There was a considerable decrease in both Hepatitis A and Typhoid in 2017, but death due to suspected Hepatitis increased. This year incidence of ADD was more in Malappuram, Thrissur, Kozhikkode, Palakkad, Thiruvananthapuram and Kannur. Hepatitis A was more in Malappuram, Kozhikkode, Wayanad, Ernakulam, Kollam, Thrissur and Pathanamthitta. Confirmed cases of Typhoid was more in Palakkad district.

The main reason for waterborne diseases is attributed to the unavailability of safe drinking water in many parts of the district especially in tribal and coastal areas. Unhygienic drinking water sources like wells, pump houses, water supplied through tanker lorry, leaks in public water supply pipes and the consequent mixing of foul water with drinking water, dumping of wastes including sewage in water sources, use of commercial ice in preparation of cool drinks, habit of unsafe water in preparation of welcome drinks etc are some reasons for spread of water borne diseases. For prevention and control of communicable diseases, Health Department has formulated a yearlong action Plan called “Jagratha” which will be implemented from November 2017 to December 2018.

HIV/AIDS

It is estimated that around 2.4 million people in India are currently living with HIV source. Kerala State Aids Control Society is the pioneer organisation in the State working with the objective of controlling the spread of HIV as well as strengthening the State’s capacity to respond to

HIV/AIDS. The society was formed to implement the National Aids Control Programme in the State.

In Kerala, the prevalence of HIV/AIDS is 4.95 per cent among injecting drug users (IDU), 0.36 per cent among men having sex with men (MSM) and 0.73 per cent among Female Sex Workers (FSW). The HIV prevalence among FSWs and MSM is nearly 1 per cent, but the prevalence among IDUs is 4.95 per cent (though it shows downward trend from 9.57 per cent in 2007, 5.3 per cent in 2008 and 4.95 per cent in 2011). Current data suggest that the HIV epidemic in the State is largely confined to individuals with high risk behavior and their sexual partners.

Prevalence of Major Communicable Diseases

A comparative analysis of the prevalence of major communicable diseases is given in **Table 4.2.3**.

Non-Communicable Diseases

Common non-communicable diseases (NCD) causing great threat to life are diabetes, hypertension, cardio vascular diseases, cancer and lung diseases. Unless interventions are made to prevent and control non-communicable diseases, their burden is likely to increase substantially in future, due to ageing population and changes in life style. Considering the high cost of medicines and longer duration of treatment, this constitutes a greater financial burden to low income groups. Rampant modernisation and urbanisation, drastic lifestyle changes, heavy dependency on alcohol and tobacco, affinity for white collar jobs, bizarre eating patterns, low priority for physical exertion, high levels of stress in all strata of population are some of the reasons contributing to the prevalence of NCDs in the State.

In India, it is estimated that 42 per cent of total death are due to NCDs. In Kerala, the situation is more serious as more than 52 per cent of the total death between the productive age group of 30 and 59 is due to NCD. Hypertension, diabetes

Table 4.2.3
Prevalence of Communicable Diseases in Kerala

Disease	2013		2014		2015		2016		2017 (Up to October)		
	Cases	Death	Cases	Death	Cases	Death	Cases	Death	Cases	Death	
Dengue Fever	7,938	29	2,548	13	4,114	29	7,218	21	18,943	34	
Malaria	1,634	0	1,751	6	1,549	4	1,540	3	816	3	
Confirmed Chikun- gunya	247	0	264	0	152	0	124	0	70	0	
Japanese Encephalitis (JE)	2	0	3	2	0	0	1	0	0	0	
Leptospirosis	814	34	1,075	43	1,098	43	1,710	35	1,028	13	
Hepatitis - A	6,166	8	2,833	6	1,980	10	1,351	10	717	7	
Cholera	20	0	8	1	1	0	10	0	6	1	
Typhoid	2,930	0	1,955	0	1,772	0	1,668	2	295	0	
ADD (Diarrhoea)	411,819	2	442,109	5	467,102	4	493,973	14	379,413	5	
Scrub Typhus	68	0	433	6	1,149	15	633	3	205	1	
Kala Azar	0	0	1	0	4	0	2	0	0	0	
Kysanur Forest Disease	1	0	6	0	102	11	9	0	0	0	
H1N1	32	1	62	15	900	80	22	1	1,328	75	
Fever	OP	2,922,351	23	2,655,507	29	2,676,842	26	2,641,311	18	2,858,291	95
	IP	119,998		85,959		96,189		80,049		95,433	
Diarrheal Diseases	-	-	-	-	-	-	326,517	10	293,431	4	
Enteric fever	-	-	-	-	-	-	1,192	0	250	0	
Measles	-	-	-	-	-	-	870	3	347	0	
Chickenpox	-	-	-	-	-	-	12,698	1	20,185	9	

Source: Directorate of Health Services

mellitus, cardio vascular diseases, stroke and cancer are the major non communicable diseases seen in Kerala. Studies show that 27 per cent of Kerala adult males are having diabetes mellitus compared to 15 per cent in India. 19 per cent of adult female population is diabetic compared to 11 per cent in India. Genetic predisposition, dietary habits and sedentary lifestyle are considered to be the reason for this phenomenon. 40.6 per cent of adult males and 38.5 per cent of adult females are hypertensive compared to 30.7 per cent and 31.9 per cent in India. Incidents of obesity, hyper lipedemia, heart attack and stroke are also high. Cancer mortality is extremely high in males in Kerala compared to national average.

In a recent survey conducted by Achutha Menon Centre for Health Science Studies, the NCD scenario in the State has further worsened.

The survey reveals that one out of three has hypertension and one out of five has diabetes. The study also revealed that the level of normalcy attained for blood sugar and blood pressure even after early detection and management is significantly low compared to the standards. In adults over 18 years of age, on an average, nearly one of three and one of five adults in Kerala had hypertension and diabetes, respectively. Control status of both hypertension (systolic blood pressure less than 140 mm of hg and diastolic blood pressure less than 90 mm of hg) and diabetes (fasting blood sugar less than 126 mg/dl) were alarmingly low at 13 per cent and 16 per cent respectively of the individuals with hypertension and diabetes. While, the control rates in the western population is over 50 per cent. Additionally, among males, one of four adults reported current use of some form of tobacco

and over 30 per cent reported current alcohol use. The proportion of population consuming salt above the recommended level of 5 gm/day was 69 per cent. More than three fourth of the study population (77.8 per cent) reported consumption of less than the recommended three servings of vegetables per day and 86 per cent participants reported consumption of less than two servings of fruits per day. Reduction of tobacco use in Kerala by about eight percentage as per the latest Global Adult Tobacco Survey figures is one of the achievements in the State. The extremely low rates of control of hypertension and diabetes need to be addressed urgently. Risk reduction strategies for all the NCD risk factors (tobacco, alcohol, unhealthy diet and physical inactivity) are being implemented through local self-governments and schools. However in order to enhance the control rates of diabetes and hypertension secondary prevention will have to be enhanced.

Cancer

Cancer is a major disease which has affected a major section of population. Every year, 35,000 new cases of cancer are getting detected in Kerala. Nearly 1 lakh people are under treatment for cancer disease annually. Apart from Medical Colleges, Regional Cancer Centre, Malabar Cancer Centre and Cochin Cancer and Research Centre are the major hospitals in Government sector which offer treatment for cancer patients. Apart from these institutions all the major Government medical colleges also provide cancer treatment. Delay in early detection, huge treatment cost, minimal treatment centres and lack of awareness contribute to high mortality of the disease.

Malabar Cancer Centre

Malabar Cancer Centre, Kannur an autonomous centre under the Government of Kerala, has been established with the aim of providing oncological care to the people of north Kerala. The Centre has bed strength of 200 and many latest facilities for the treatment of cancer patients. In 2016-17, a total of 3,971 in patients and 60,834 out patients were treated in Malabar Cancer Centre. The average

number of new cases detected every year in the centre is 4,392.

Mental Health

As per the 2011 Census of India, 0.20 per cent of the population of Kerala suffers from mental illness and 0.20 per cent suffers from mental retardation compared to a national average of 0.06 per cent and 0.12 per cent respectively. Although Kerala reports higher levels of mental illness compared to all India, less importance is given to the field of mental health in Kerala.

A mental health policy was approved by the State Government in May 2013. The policy suggests that the treatment for mental illness should start from the Primary Health Centres making the mental hospitals and the Department of Psychiatric Medicines as referral centres by upgrading them. Research should be encouraged for prevention and cure of mental illness. An awareness programme among the general public about mental illness has also been suggested in the policy. Proper training should be imparted to the doctors free of cost, whether they come from public or private sector. The State Mental Health Policy, 2013 envisages convergence of various departments for the care and rehabilitation of the mentally ill.

In Kerala, three mental health centres are functioning with bed strength of 1,366. District Mental Health Programme is functioning in all the districts with a total of 10,080 OP per month. Rehabilitation facilities are offered through these centres. Lack of awareness, attitude of general public, neglect of family members and lack of proper follow up etc. are the major problems noticed. State Government has started 26 day care homes and 506 cured mentally ill patients are being given day care.

District Mental Health Programme

District Mental Health Programme (DMHP) is functioning in all the 14 districts of the State. Thiruvananthapuram district achieved successful

integration of Mental Health into Primary Care by 2014. Now Mental Health Clinics are being conducted in all PHCs and CHCs in the district by trained doctors of the concerned institutions and medicines are made available to patients from their nearest PHCs. Efforts are on to scale it up to the whole State. Around 17,000 patients are receiving treatment every month, from DMHPs in the State. Other activities include information education and communication (IEC) activities for general public to create awareness and reduce stigma, training for doctors, nurses, pharmacists and health workers for integration of mental health into primary care and targeted interventions like substance abuse prevention, suicide prevention, geriatric mental health and stress management. Day Care Centres were started for mentally ill in remission under Comprehensive Mental Health Scheme. Now 26 day care centres are functioning in the State under the scheme. School Mental Health Programme is implemented in the State in association with NHM.

Aswasam: Depression management in Primary Care was started in 170 Family Health Centres across the State. Health workers and staff nurses were trained in screening using PHQ9 and psychological first aid, while doctors were trained in diagnosis and management of depression at Primary Care. Referral Protocol for cases to be seen by DMHP psychiatrist is included in the programme. 4,588 persons have been screened till date, of which 626 were positive for depression. Pharmacotherapy started for 400 and psychosocial intervention for 472.

Modern Medicine

In Kerala modern medical services are offered by the Directorate of Health Services (DHS) and the concerned education sector is dealt by the Directorate of Medical Education (DME).

Health Care Institutions under DHS

At present there are 1,280 health institutions with 38,004 beds and 5,465 doctors under Health Services Department (DHS) consisting 848

Primary Health Centres, 232 Community Health Centres, 81 Taluk Head Quarters hospitals, 18 District hospitals, 18 General hospitals 3 mental health hospitals, 8 W&C Hospitals, 3 leprosy hospitals, 17 TB clinics, 2 TB hospitals, 5 other speciality hospitals and 45 other hospitals. Primary Health Centres are institutions providing comprehensive primary care services including preventive care and curative care. CHCs and Taluk level institutions form the basic secondary care institutions. District hospitals, General Hospitals and Maternity Hospitals provide speciality services and some super specialty services. In the 13th Five-Year Plan, focus will be on the implementation of the specialty cadre in all health care institutions up to the level of community health centres and modernisation of the functioning of the PHCs as Family Health Centres. The bed population ratio is 878 and the average Doctor Bed Ratio is 6.95. Category wise major medical institutions and beds in Kerala, details of IP, OP cases, major and minor surgeries conducted and medical and para-medical personnel under DHS during 2017 are given in **Appendix 4.2.3, 4.2.4 and 4.2.5.**

Financial Protection Against Catastrophic Health Care Expenditure

Rashtriya Swasthya Bima Yojana (RSBY) is a Health Insurance Scheme, sponsored by the Government of India, for providing free and quality inpatient care to the families falling below poverty line (BPL) in the society. The scheme promises inpatient treatment facility upto ₹30,000 on paperless, cashless and floater basis to a maximum of five members in a family, for a period of one year through selected public and private hospitals with a prefixed medical and surgical rates for treatment in general ward. RSBY does not cover outpatient treatment cases. Minimum period of 24 hour inpatient treatment is required for getting the benefit under the scheme. More than 1,100 surgical procedures with prefixed rates are included in the benefit package. Government of India pays 60 per cent of the premium and the

State pays the rest. Three important features of RSBY are (i) there is no age limit for joining the scheme; (ii) it covers existing diseases; and (iii) a transport allowance of ₹100 is being paid in cash to the patient at the time of discharge from the hospital. Maximum transportation allowance payable in a year is restricted to ₹1,000. It has a component to pay the wages foregone as well as the BPL population according to the definition adopted by the State is over and above the Planning Commission estimate by more than 10 lakh, the State Government formulated its own scheme for catering to the needs of the additional 10 lakh population. These two schemes are being jointly run under the banner Comprehensive Health Insurance Scheme (CHIS). A special purpose vehicle by name CHIAK (Comprehensive Health Insurance Agency, Kerala) has been formed and entrusted with the task of running the schemes.

Government of India has extended the scheme to cover families of the participants of Mahatma Gandhi National Rural Employment Guarantee Scheme who have worked for more than 15 days in the previous year, street vendors, and domestic workers etc. Overall, workers in the unorganised sector are being covered by the scheme in increasing numbers. The State has been trying to bring other categories of population into the CHIS net. In 2014-15, the Government brought the members of the various welfare fund boards and its pensioners, all Scheduled Caste and Scheduled Tribe population, and families engaged in fishing and workers of various unorganised sectors under CHIS net. The two schemes together cover a sizeable proportion of the population in the State. The progress of the scheme is given in **Appendix 4.2.6**. The number of families covered has steadily increased to reach 34.83 lakh by 2017-18.

Financial protection in the form of RSBY offered the option of using services of the private sector by all those enrolled in the scheme. Interestingly, instead of the proportion of users of private institutions increasing over the years, the share of the government hospitals in the total has steadily increased. This is given in **Appendix 4.2.7**.

A new scheme for providing tertiary care treatment with a benefit package of maximum ₹70,000 for critical illness like cancer, cardiac and renal failure to all the RSBY and CHIS card holder families was designed during 2010-2011. The scheme, named as CHISPLUS, was launched by the middle of February 2011. The coverage of CHISPLUS has been extended in 2012 by including diseases relating to liver, brain and treatment of accident trauma care. The scheme is implemented through all the five Government Medical Colleges in the State, Regional Cancer Centre, Thiruvananthapuram, Malabar Cancer Centre and all Government District Hospitals, General Hospitals, and Taluk Hospitals. The scheme is monitored by CHIAK with the help of software developed by Keltron. The scheme, implemented through a non-insurance route, has benefited 357,036 patients till 2016-17 with a total claim of ₹361.43 crore. This is presented in **Appendix 4.2.8**.

The RSBY benefit package does not cover tertiary care. The CHIS Plus covers limited tertiary care for the population groups registered under the scheme. This leaves out the other groups for whom tertiary care treatment becomes unaffordable. Many among them would appeal for assistance. Perceiving such a need, the State designed a scheme called Karunya Benevolent Fund (KBF) to meet the tertiary care expenditure of deserving individuals. Unlike the CHIS, which is a cashless scheme, the KBF requires a prior authorisation. The amount is paid to the hospital which has to submit the utilisation certificate. In addition, there is also provision to provide a one-time assistance of ₹3,000 per family. Treatment can be availed at all government hospitals and empaneled private hospitals.

Arogyakiranam

Arogyakiranam was one of the flagship Health programs of the Government of Kerala. The program provides free treatment and related medical services to all patients from birth to 18 years, as an entitlement. Expenses covered by this entitlement include costs incurred for OP

registration, investigations, drugs/implants/materials used in treatment and procedures. The fund for coverage of treatment expenditure was allotted to districts, to be maintained as corpus fund, from which all expenses were debited. During the period October 2013 to July 2017, this scheme benefited 20,432,275 patients. During 2016-17 alone, the scheme has benefitted 7,642,497 patients.

National Health Mission

The Government of India has launched the National Health Mission (NHM) which includes two sub missions NUHM and NRHM. NHM has five financing components to the States, namely (i) NRHM/RCH Flexi-pool, (ii) NUHM Flexi-pool (iii) Flexible pool for Communicable Diseases, (iv) Flexible pool for Non Communicable Diseases including injury and trauma and (v) Infrastructure Maintenance. Under the infrastructure maintenance component, support has been given over several Plan periods, to States to meet salary requirement of Schemes viz. Direction and Administration (Family Welfare Bureaus at State and district level), Sub Centres, Urban Family Welfare Centres, Urban Revamping Scheme (Health Posts), ANM/LHV Training Schools, Health and Family Welfare Training Centres, and Training of Multi-Purpose Workers (Male).

NHM is functioning in the State for the development of health institutions with Central Government funding. 40 per cent of the total fund has to be given to the NHM by the State Government as State share. NHM is supporting the Health Services Department, Directorate of Medical Education and AYUSH Departments. National Rural Health Mission aims to provide accessible, affordable and accountable quality health services to the poorest households in the remote rural regions. Under NRHM, the focus is on a functional health system at all levels, from the village to the district. There are 83 Urban Primary Health Centres under NHM. Total GOI release to the State in 2014-15 was ₹224.94 crore, in 2015-16 ₹219.19 crore and in 2016-17 it was ₹191.94 crore.

Pradhan Manthri Swasthya Suraksha Yojana (PMSSY)

Pradhan Manthri Swasthya Suraksha Yojana is a Government of India supported scheme to improve infrastructure facilities and technology in Government Medical College, Thiruvananthapuram (Phase I) and Kozhikode and Alappuzha (Phase III) with a total outlay of ₹150 crore each, of which ₹30 crore is the State share. The project for Government Medical College, Thiruvananthapuram (Phase I) has already been completed and the rest are ongoing in 2017-18.

State Institute of Medical Education and Technology (SI-MET)

State Institute of Medical Education and Technology (SI-MET) was established in the State in 2008 to promote medical education and research. There are seven nursing colleges functioning under SI-MET with an annual intake of 340 students. A total of 918 students are studying in the Nursing Colleges of SI-MET as on October 2017.

Child Development Centre (CDC)

Child Development Centre (CDC) established by the Government of Kerala is an autonomous centre of excellence in early child care and education, adolescent care and education, pre-marital counseling, women's welfare and other related fields to reduce childhood disability through novel scientific initiatives and create a generation of prospective and responsive parenthood through healthy children and adolescents. The number of patients treated was 14,174 in 2015-16 and was 19,051 in 2016-17. Only out-patient services are available and there is no facility for admitting patients. Around 434 medical and nursing students got academic training.

Drugs Control Department

The responsibility of the Drugs Control Department is to ensure the availability of quality

drugs to the public and see that the market is free from counterfeit, spurious and substandard drugs and no drugs are sold at a price higher than the retail price marked on the container. The Department has 6 Regional Offices, 11 District Offices, 4 Ayurveda Wing Offices and 2 Drugs Testing Laboratories. Drug testing laboratories are functioning at Thiruvananthapuram and Ernakulam. Major achievements of the department in 2016-17 are given in **Table 4.2.4**.

Medical Education

In Kerala, Medical Education is imparted through 9 Medical Colleges at Thiruvananthapuram, Alappuzha, Kozhikode, Kottayam, Manjeri, Idukki, Ernakulam, Kollam and Thrissur districts and Nursing Education through 6 Nursing Colleges in Thiruvananthapuram, Kozhikode, Kottayam, Alappuzha, Ernakulam and Thrissur districts. Five Dental Colleges are functioning at Thiruvananthapuram, Kozhikode, Alappuzha, Thrissur and Kottayam districts. Besides, four colleges of Pharmacy and one Paramedical Institute is also functioning under the Department.

Medical and Para medical courses conducted in Government Medical Colleges with annual intake of students, details of clinical and non-clinical personnel in Medical Colleges under DME, during 2017-18 are given in **Appendices 4.2.9 and 4.2.10**. A comparative analysis of the status of medical college hospitals and attached institutions in 2016-17 and 2017-18 is given in **Appendix 4.2.11**. The bed strength has increased by 330 in

2017-18 in medical college institutions as compared to the previous year. The number of outpatients and major surgeries conducted has increased during 2016-17. Major achievements of Medical Education Department in 2016-17 include;

- Aardram project started in all Medical Colleges
- Biometric punching system started in all Medical Colleges
- Initiated steps for implementing e-governance
- Heart transplantation surgery successfully done in Medical College, Kottayam.
- Construction of poly trauma building, PMSSY project and burns unit completed in Thiruvananthapuram Medical College
- Burns unit started in Medical College, Thrissur
- 390 posts created in Parippally, Medical College
- First phase construction completed in Medical College, Idukki

Kerala University of Health and Allied Sciences

Kerala University of Health Sciences was established as per the Kerala University of Health Science Act, 2010 with the aim of ensuring proper and systematic instructions, teaching, training and research in Modern medicine, Homoeopathy and Indian System of Medicine and allied health sciences in Kerala. Academic activities of the University commenced in academic year 2010-11. The number of institutions affiliated to University is (up to October 2017) 284 with 37 Government

Table 4.2.4
Major Achievements of the Drugs Control Department in 2016-17

Number of inspections conducted	13,712
Number of prosecutions initiated	77
Number of sale licences suspended as deterrent measure	340
Number of samples tested	9,161
Number of new manufacturing licenses issued (Allopathy And Cosmetics)	26
Number of price violations detected and reported to NPPA	27
Number of new Blood Bank licenses issued	15

Source: Drugs Control Department

colleges, 5 Government Aided Colleges and 242 Self-financing Colleges. The colleges fall under all systems of medicine such as Modern Medicine, Ayurveda, Homoeopathy, Sidha, Unani, Yoga, Naturopathy, Nursing, Pharmaceutical Science and Paramedical courses. The total intake of students is almost 20,000 under various health sciences stream. Details of the Government, Aided, Unaided colleges affiliated under various streams are given in **Table 4.2.5**.

Indian System of Medicine

Ayurveda is a science dealing not only with treatment of some diseases but also a complete way of life. The Department of Indian System of Medicine renders medical aid to the people through the network of Ayurveda hospitals and dispensaries, grant-in-aid Ayurveda institutions, Sidha, Unani, Visha, Netra and Naturopathy. Specialty hospitals such as Mental Hospital, Panchakarma, Nature cure and Marma are functioning under this Department. At present there are 127 hospitals and 819 dispensaries under the department. The State Medicinal Plants Board co-ordinates matters relating to the cultivation, conservation, research and development and promotion of medicinal

plants in the State. List of major institutions and district wise distribution of institutions, beds and patients under ISM department in 2016 and 2017 is given in **Appendix 4.2.12**.

Special projects were implemented by the ISM Department in 2016-17 in addition to the normal medical treatment. They are Balamukulam, Ritu, Prasadam, Koumarashtoulyam, Drishti, Jeevani, Punarnava, Karalrogamukthi, Snehadhara, Geriatric Care, Yoga, Sports Medicine, Panchakarma, Ksharasutra, Manasikam, Vayoamritham and Bhamini.

AYUSH (Ayurveda, Yoga and Naturopathy, Siddha, Unani and Homoeopathy)

Government of India has set up two regulatory bodies to set standards of medical education. The Central Council of Indian Medicine (CCIM) under Indian Medicine Central Council (IMCC) Act, 1970 regulates educational institutions and practitioners in respect of Ayurveda, Unani and Sidha systems of medicines. The Central Council

Table 4.2.5
Details of the Government, Aided, and Unaided Colleges Affiliated Under Various Streams (as on October 2017)

Stream	Government	Aided	Unaided	Total
Modern Medicine	10	0	23	33
Ayurveda Medicine	3	2	12	17
Homoeo Medicine	2	3	0	5
Dental	5	0	20	25
Sidha Medicine	0	0	1	1
Unani Medicine	0	0	1	1
Nursing	6	0	113	119
Paramedical	7	0	33	40
Pharmacy	4	0	37	41
A y u r v e d a Pharmacy	0	0	1	1
Ayurveda Nursing	0	0	1	1
Total	37	5	242	284

Source: Kerala University of Health and Allied Sciences

of Homoeopathy (CCH) under Homoeopathy Central Council Act, 1973 regulates educational institutions and practitioners in respect of Homoeopathy system of medicines. At present Yoga and Naturopathy, being drugless systems, are not regulated.

National AYUSH Mission

Department of AYUSH (Ayurveda, Yoga and Naturopathy, Siddha, Unani and Homoeopathy), Ministry of Health and Family Welfare, Government of India has launched National AYUSH Mission (NAM). The basic objective of NAM is to promote AYUSH medical systems through cost effective AYUSH services, strengthening of educational systems, facilitate the enforcement of quality control of Ayurveda, Siddha, Unani and Homoeopathy drugs and medicinal plants. The funding pattern will be 60:40 by Centre and State. Government of Kerala started the Ayush Department in the State on August 8, 2015. Government of India release in 2016-17 was ₹858.63 lakh and in 2017-18 (up to September 30, 2017) it was ₹1,260.82 lakh.

Ayurveda Medicine Manufacturing- OUSHADHI

OUSHADHI is the largest manufacturer of Ayurvedic medicines functioning in India in the public sector. It is one among the few profit making public sector undertakings. Oushadhi is the exclusive supplier of Ayurvedic medicines to government hospitals and dispensaries of Ayurveda Department. In Kerala, Oushadhi supplies medicines to State ISM department at 30 per cent less than the market price and ISM Department supplies this medicine to the poor patients in the State free of cost. The company also caters to the demand of the public through a network of 600 exclusive agencies spread in and outside the State. The sales proceeds of the company in 2016-17 are ₹95.76 crore and the profit is ₹13.99 crore.

Ayurveda Colleges

There are 3 Government Ayurveda Colleges situated at Thiruvananthapuram, Thrissur and Kannur having bed strength of 1,389. Total number of inpatients treated in 2016 were 6650 and outpatients treated were 523,925. It was 13,100 and 460,595 respectively in 2017 (up to August 2017). Panchakarma hospital and Women and Children hospital are also functioning under the Government Ayurveda College Thiruvananthapuram. There are two aided Ayurveda Colleges, 11 self-financing Ayurveda Colleges, one self-financing Siddha College, one self-financing Unani College and 6 Paramedical self-financing colleges for imparting Medical education in the State. Annual intake of students for UG Degree is 980, PG Degree is 127 and Paramedical Courses is 700.

HOMOEOPATHY

There are 659 homoeopathic dispensaries, 14 District hospitals, 17 Taluk hospitals, 2 ten-bedded hospitals and one hospital with total bed strength of 100 under Homoeopathy Department in the State. In addition, Kerala State Homoeopathic Co-operative Pharmacy (HOMCO) Alappuzha, a medicine manufacturing unit is also functioning under the Directorate of Homoeopathy. HOMCO is running in profit for the last 20 years. District-wise distribution of institutions, beds and patients treated under Homoeopathic Department in 2016 and 2017 is given in **Appendix 4.2.13**.

Major Achievements of Homoeopathy Department in 2016-17 and 2017-18

- One Homoeo dispensary in each district was upgraded as model dispensary.
- Clinical lab was set up in Government Homoeo Hospital Kayamkulam.
- Pain and palliative care unit was started in all District Homoeo hospitals.
- AYUSH Holistic centres for prevention and management of lifestyle diseases were started in Thiruvananthapuram, Kollam, Ernakulam,

Malapuram and Kozhikkode integrating the merits of Homoeopathy, Ayurveda, Yoga and Naturopathy systems of medicine.

- Seethalayam is a gender based scheme for the multi-level support, welfare and health care service exclusively for the suffering women folk implemented in all District Homoeo Hospitals. De-addiction centres and infertility clinics are also functioning as part of this programme.
- Floating Homoeo Dispensaries were started in the coastal area of Kuttanad in Alappuzha District.
- Endocrine disorder care centre at Idukki, Mother and Child care centre at Kannur, Geriatric care centres at Alappuzha, Kollam, Kozhikkode, Kottayam and Wayanad and speciality mobile clinic at Idukki were started under the scheme “Homoeopathy Speciality Care Centres.”
- 16 Temporary Homoeo Dispensaries were started at various pilgrim centres during festival season.
- 14 Homoeo Dispensaries (one Dispensary in each district) were upgraded as Model Homoeo Dispensaries and existing 56 Model Homoeo Dispensaries across the State were standardised.
- One clinical lab was set up in Government Homoeo Hospital, Pala.
- Regional Medical Stores were started in Kottayam, Malapuram and Kannur
- Adolescent Health Care and Behavioural Management Programme was implemented in all District Homoeo hospitals.
- Second phase expansion of HOMCO was initiated.

Homoeo Medical Education

Homoeo Medical Education is imparted through two Government Homoeopathic Medical Colleges, at Thiruvananthapuram and Kozhikkode. In addition to this, 3 aided colleges and one unaided college are functioning under this Department. Total bed strength of the Government Homoeopathic Medical College at Thiruvananthapuram is 118 and the patient treated in 2016-17 in IP was 1,192

and OP was 114,215. Total bed strength of the Government Homoeopathic Medical College at Kozhikkode is 100 and the patient treated during 2016-17 in IP was 1678 and OP was 155,903. Annual intake of students and courses in the six Homoeo Medical Colleges are given in **Appendix 4.2.14**.

Immunisation Coverage

Immunisation is one of the most successful and cost effective health interventions and prevents debilitating illness, disability and death from vaccine preventable diseases such as diphtheria, hepatitis A and B, measles, mumps, pneumococcal disease, polio, rotavirus diarrhea, tetanus etc. The coverage of immunisation programmes in Kerala during five years from 2013-14 is given in **Appendix 4.2.15**.

Outlook

A healthy society can contribute more significantly and effectively to economic development. Long term illness and expensive illness drive non-poor into poverty. Good health is indispensable for the enjoyment of every phase of life. High levels of education especially among women and greater health consciousness have played a key role in the attainment of good health standards in Kerala. However, the issues to be addressed are the health problems of the tribal population and other marginalised communities, re-emergence of communicable diseases, second generation issues like increasing incidence of non communicable diseases, health problems of the aged especially women and increasing health expenditure etc. These challenges will have to be addressed in the coming years. There are specific issues to be addressed specifically in the areas of general health, rural health, tribal health, women health, mother-child health care, health insurance and medical tourism, etc. in the 13th Five-Year Plan period. The public health care system has to be strengthened further to face these challenges.

DRINKING WATER

Kerala is considered as the land of water resources with high rainfall, rivers, backwaters, lakes and many streams. However, Kerala is frequently facing drought and acute water scarcity in many districts. In the State, majority of people in rural areas are depending on unprotected wells, tanks, rivers and streams for their water needs. The urban areas are also not fully covered by protected water supply services. Though Kerala has given utmost importance for water supply schemes during Five-Year Plans, provision of potable water supply across the State remains an area of serious concern. The approach to 13th Five-Year Plan is to assure drinking water supply to the entire population, give special focus on drinking water supply for scarce urban area, pay special attention to protect wells and take appropriate measures to diminish distributional loss.

Kerala Water Authority (KWA) and KRWSA (Kerala Rural Water and Sanitation Agency) are the major implementing agencies in drinking water sector. The role of Local Level Institutions is also important in this regard. As part of providing safe drinking water to every citizen, Government of India assists the States in the execution of urban and rural water supply schemes. Similarly the State also has programmes for improving water supply in rural and urban areas.

Water Resources

Kerala has 41 west-flowing and 3 east-flowing rivers originating in the Western Ghats. Out of the 44 rivers, there are only 4 medium and 40 minor rivers in Kerala and the State does not have a single major river as per the national norms. The State is also blessed with a number of lakes and backwater lagoons. But shortage of drinking water is a serious concern in many parts of the State. Deficiency in rainfalls, which is prime source of

our water resources, has affected drinking water availability in the State. This shortage in rainfall will affect all sectors in the economy including agricultural sector.

Kerala receives two monsoons every year. The average rainfall of the State is 3,055 mm, which is two times more than that of national average. In Kerala 69 per cent of the annual rainfall is received during the Southwest Monsoon (June to September) and 16 per cent is during Northeast Monsoon (October to December) and the remaining is from the Summer Rains. Due to the physiographical pattern of Kerala, the water drains very fast into the sea. This results in scarcity of water in many parts of the State during non-monsoon period. Monsoon rains received in the year 2017 is below the normal rainfall. Statistics shows a 9 per cent negative variation in actual rainfall from the normal rainfall during the 2017 monsoon season. **Table 4.2.6** shows district wise variations in the distribution of rainfall in 2017. The deviation was largest in Wayanad district (37 per cent). Highest rainfall was received in Kasargod (2,645.6 mm) and lowest in Thiruvananthapuram (764 mm). Wayanad district with 37 per cent shortage of rainfall is the most sensitive and fragile spot in our monsoon system. This is quite alarming and forces one to consider revising the development strategies in the district.

Drinking Water Availability

As per NSSO 69th round, 85.8 per cent households in rural India has sufficient drinking water, which is 89.6 per cent for urban India. Among the States, Uttar Pradesh (97.1 per cent) has the highest proportion of rural households having sufficient drinking water and Jharkhand has the lowest (70.3 per cent). Similarly, Punjab (99.5 per cent) and Kerala (29.5 per cent) have the highest and lowest

proportion of households having improved source drinking water in rural area respectively. In case of improved source of drinking water in urban areas also, Kerala has the lowest percentage (56.8 per cent). (Appendix 4.2.16). District-wise analysis of drinking water availability based on location is given in Figure 4.2.1 and Appendix 4.2.17.

Coverage

The total water supply schemes of KWA in operation as on March 31, 2017 in the State is 1,073, with a total installed capacity of 3,367.13 MLD (Million liters per day) which means the average per capita availability of piped water is 104.20 liters per day. Out of 1,073 schemes, 989 are rural and 84 are urban water supply schemes. There is a decrease in number of water supply schemes in operation in the State, as 1,078 schemes were under operation in previous year. Thrissur has highest number of water supply schemes (119) followed by Ernakulam (98). The least covered district under water supply schemes of KWA is Wayanad (27) (Appendix 4.2.18) However the LPCD (liters per capita per day) varies in different habitations in all districts.

The highest LPCD is in Ernakulam (201.35) and the lowest is in Kasargod (35.77) as on March 31, 2017 (Appendix 4.2.19). But after accounting for the high percentage of non-revenue water, the per capita availability is much less and also the schemes are mostly located in urban areas. Number of Water Supply Schemes of KWA transferred to Local bodies as on March 31, 2017 is 477. District-wise details of water supply schemes transferred to local bodies are given in Appendix 4.2.20

KWA distributes water through House Service Connections (HSC) and street taps. Water Supply schemes of Kerala Water Authority covers 1.81 crore population of the State which accounts for 54 per cent of the population. 54.19 per cent of rural population and 54.36 per cent of urban population is covered by piped water supply. KWA aims to cover 100 per cent population with 100 LPCD for rural and 150 LPCD for urban areas.

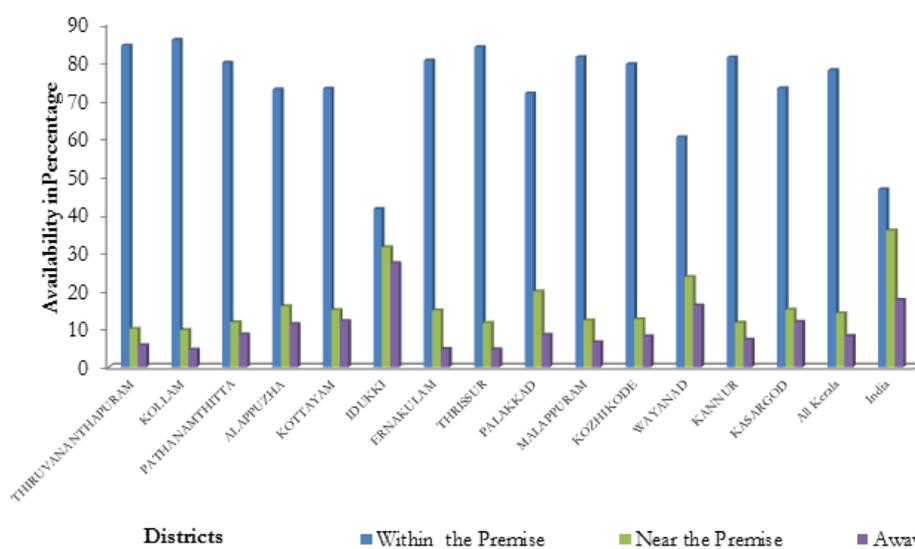
Ernakulam district with coverage of 83 per cent population has the highest coverage among 14 districts of Kerala, followed by Thiruvananthapuram District (72 per cent) and

Table 4.2.6
Performance of Southwest Monsoon 2017 over Kerala (June 1, 2017 to September 30, 2017)

District	Actual (mm)	Normal (mm)	Departure (%)
Kerala	1,855.9	2,039.6	-9
Thiruvananthapuram	764	871.3	-12
Kollam	1,355.5	1,332.3	2
Pathanamthitta	1,754	1,715.7	2
Alappuzha	1,585.8	1,745.9	-9
Kottayam	1,929.1	1,897.3	2
Idukki	2,057.6	2,276.2	-10
Ernakulam	2,002.9	2,065	-3
Thrissur	1876	2,197.5	-15
Palakkad	1,521.7	1,572.7	-3
Malappuram	1,926.9	2,060.4	-6
Kozhikode	2,521.6	2,603.1	-3
Wayanad	1,652.1	2,632.1	-37
Kannur	2,301.3	2,669	-14
Kasargod	2,645.6	3,007.5	-12

Source:-Meteorological Centre, Thiruvananthapuram

Figure 4.2.1
Drinking Water Availability in Kerala (in per cent)



Thrissur (71 per cent). The coverage is the least in Kasargod district (21 per cent). Details are given in **Figure 4.2.2** and **Appendix 4.2.21**.

Regarding drinking water supply in rural areas, Kollam district has the highest coverage of 75 per cent, followed by Ernakulam district (74 per cent), Thrissur (68 per cent) and Alappuzha (68 per cent). Idukki (29 per cent) has the lowest coverage due to its special natural geographic features followed by

Kasargod (28 per cent). The average rural coverage of the State is 54 per cent (**Figure 4.2.3**).

Regarding drinking water supply in urban Kerala, Kasargod has the lowest coverage of only 10 per cent. Ernakulam has the highest urban watersupply coverage of 87 per cent, followed by Thiruvananthapuram (76 per cent), Thrissur (72 per cent) and Palakkad (72 per cent) (**Figure 4.2.4**).

Figure 4.2.2
District-wise Coverage of Drinking Water



Source: KWA (Data as on September 30, 2017)

Figure 4.2.3
District-wise Rural Drinking Water Coverage



Source: KWA

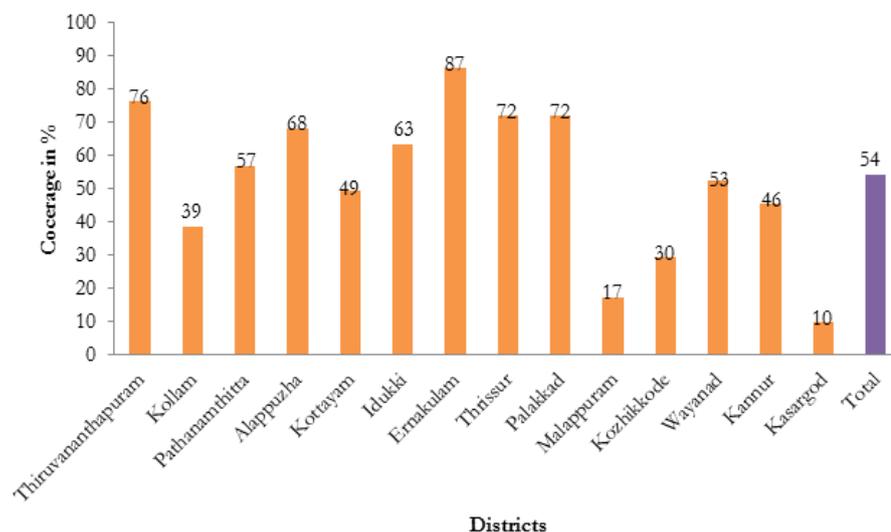
Total water supply connections of KWA as on March 31, 2017 including domestic, non domestic and industrial shows an increase of 283496 more connections than the previous year. Water connection for industrial use is only 1,623. Total street taps is 214,097, which is an increase of 6,063 as compared to previous year. The total number of street taps in Panchayats is 159,463,

Corporations 20239 and Municipalities 34,395. Data shows a decrease in the number of street pipes in Panchayats as compared to 162,568 in 2015-16 (**Appendix 4.2.22**).

Slipped Back Habitations

The District-wise details of habitations covered and slipped back under water supply schemes of

Figure 4.2.4
District-wise Urban Drinking Water Coverage



Source: KWA

KWA are given in the **Table 4.2.7**. There were only 17 slipped back habitations in the previous year. The percentage of slipped back habitations increased from 0.14 per cent in 2015-16 to 0.71 per cent in 2016-17. The highest number of slipped back habitations are reported in Thrissur District (57). There are no cases of slipped back habitations in Pathanamthitta and Wayanad.

Quality of Water

Majority of drinking water sources in our State are getting polluted due to unscientific sanitation practices and indiscriminate dumping of waste. Such supply sources are bacteriologically and chemically contaminated. Though Kerala has

been achieving improvements in many sectors, performance in water quality management is very poor, which has adverse impacts on health in particular and economy in general. The District wise contamination of tested sources is given in **Figure 4.2.5**.

Population density, indiscriminate use and rampant pollution of water bodies results in increasing number of water borne diseases. The use of polluted water causes several water borne diseases, which may be fatal. Data on the number of water borne diseases shows an increasing tendency over the years. Cases reported in 2012 and 2015 were 366,463 and 470,863 respectively. This further increased to 497,027 in 2016. Data for the first

Table 4.2.7
District-wise Slipped Back Habitations in Kerala (2016-17)

Sl. No.	Districts	Total Habitations	Slipped Back Habitations	% to Total Habitations
1	Thiruvananthapuram	1,462	17	1.16
2	Kollam	2,260	002	0.09
3	Pathanamthitta	1,491	0	0.00
4	Alappuzha	1,178	5	0.42
5	Kottayam	2,195	10	0.46
6	Idukki	822	5	0.61
7	Ernakulam	1,538	19	1.24
8	Thrissur	2,774	57	2.05
9	Palakkad	1,883	15	0.80
10	Malappuram	1,972	10	0.51
11	Kozhikode	1,455	10	0.69
12	Wayanad	461	0	0.00
13	Kannur	1,395	1	0.07
14	Kasargod	665	1	0.15
Total		21,551	152	0.71

Source:-KWA

quarter of 2017 shows the figures to be 97,089. Detailed data on waterborne diseases is given in **Appendix 4.2.23**.

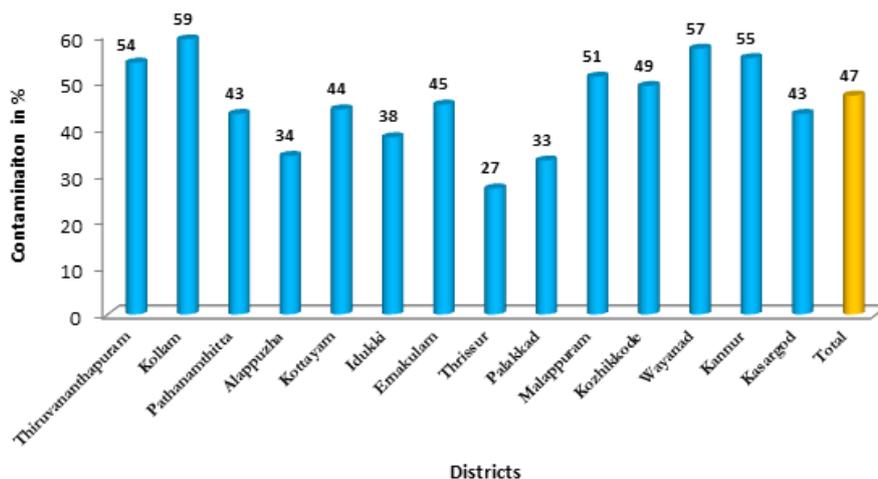
In order to assure the quality of water resources in Kerala, Centre for Water Resources Development and Management (CWRDM) implements a project “Establishment of Mobile Testing Laboratory for the Quality Assurance of Water Resources in Kerala” with the support of Water Resources Department, Government of Kerala. This mobile laboratory is aimed to raise the awareness of the communities with respect to protection of source of water. Services of the mobile laboratory was extended to approximately 120 Panchayaths, 15 Municipalities and three Corporations. More than 3,000 samples were tested using the facility. A drinking water card was provided to people after testing and this activity helped local inhabitants gain awareness about their water quality.

Sewerage

Thiruvananthapuram city has 37 per cent coverage for sewerage with about 90,000 connections. Guruvayur drainage with 3 MLD STP is almost completed except some finishing mechanical works. The project is to provide an effective drainage system to cover the entire inhabitant areas under Guruvayur Municipality. Ernakulam

has a small system with 1000 connections. Two projects for Kollam and Kozhikode are in progress. Thiruvananthapuram Sewerage Scheme was formulated during the year 1931 based on the principle of separate system, dividing the area into different blocks topographically for effective drainage of waste water. The scheme area was divided into seven blocks viz. A, B, C, D, E, F and G, facilitating efficiency of the sewerage system by laying main sewers, collecting sewers, branch sewers, etc., in combination with pumping stations and pumping mains up to the disposal point. The first block “Block-A” was commissioned in 1945. Later, Block B was commissioned in 1965 and Block C in 1970. Block D and E were partially commissioned in 1994 and 1990 respectively. Sewage farming was the treatment method adopted that time, located at Muttathara. Thiruvananthapuram Sewerage Scheme covers partially the old Corporation area, having an extent of 74.93 sq. km. with 50 wards. Presently sewerage facility is available fully or partially in blocks A to E. During the year 2013, a sewage treatment plant was commissioned with a total capacity of 107 MLD. Sewages from 10 pumping stations located in the various blocks are fed to the STP. Presently the plant is utilized for the commissioned areas of blocks A to E. The works are taken up under AMRUT and State Plan schemes for extending the sewerage facility to the

Figure 4.2.5
District-wise Contamination of Tested Sources, in per cent
(as on November 11, 2017)



Source : NRDWP-Ministry of Drinking Water and Sanitation, GOI

non covered areas and also for rehabilitation of existing schemes.

Kerala Rural Water Supply Agency (Jalanidhi)

The water supply schemes implemented under Jalanidhi has demonstrated successfully an equitable, inclusive and decentralized delivery system mainly benefiting the SC, ST (16 per cent) and BPL category (52 per cent) of rural households in Kerala. With the lessons learnt from the initial phase, KRWSA has expanded this demand responsive and decentralized service delivery approach to almost the whole State from the initial four districts done on a pilot

basis in 2005. There are two modes of action for supply of water. New institutional and financing models have evolved, such as, G-PAT (Grama Panchayat Action Teams), Ward Level Committees (WLCs) and Scheme Level Committees (SLCs) for large water supply schemes. These models with intensive involvement of GPs and Kerala Water Authority (KWA) in which bulk water is supplied by KWA and distribution is by KRWSA through Grama Panchayat have been introduced successfully. KRWSA is the nodal agency of the State Government for the implementation of Rain Water Harvesting Programme in the State. For this, the Rain Centre, a separate cell for monitoring the activities, was set up under KRWSA. Further, KRWSA is appointed as WSSO (Water and Sanitation Support Organization) of Government

Box 4.2.2

“It Always Seems Impossible, Until it’s Done”

The main sources of water in Thiruvananthapuram are at Aruvikkara (2 Million Cubic Meter storage capacity) and Peppara (70 Million Cubic Meters storage capacity), which is 25 km upstream of Aruvikkara reservoir. Water treatment plants are at Aruvikkara, PTP Nagar and Vellayambalam. The distribution system consists of a complicated network of about 5600 km, designed for 24 hours water supply with around 2 lakh consumers.

In 2016, the annual monsoon rainfall had registered a shortfall of 34 per cent in the State. Considering the seriousness of the situation, Government of Kerala declared the entire State as drought affected. The Water Authority was forced to impose water rationing in the city for the first time in the history of the city from 18th April due to extreme scarcity of water ever experienced.

Water Resources Department had to divert water from Neyyar to the Aruvikkara for supplementing the city’s water supply. Accordingly, emergency plans were charted out to pump water from Neyyar to Aruvikkara using two dredgers. Decision was also taken to procure two new 180 HP Submersible Centrifugal pump capable of delivering 50 MLD and shifting of two 100 HP centrifugal pumps available at Vellayambalam. The pipes required for carrying the water from the reservoir to the canal was identified from the available stock to avoid the delay in implementing the project.

The work started on April 21, 2017 and was completed in a record time of 14 days. Two dredgers, one with capacity of 1 MLD and the second dredger of capacity 29 MLD pumps were operated round-the clock to transfer about 117 MLD from Neyyar to Karamana river per day. KWA, Irrigation Department, KSEB, Forest department and the District Administration worked in close coordination for the success of the project.

Meticulous planning, synergy of efforts, timely decisions and able leadership together with the hard work of a dedicated team of KWA engineers as well as staff from other departments turned this huge and tough mission into a reality. This has been a challenging work in the recent history of all the departments. This can serve as an example for future projects as how cohesion and team work can help in implementing projects.

Source: - KWA

of Kerala to coordinate water related activities in the State. Jalanidhi phase-1 was implemented during the period 2000-2008. During this period 3759 small water supply schemes and 19 large water supply schemes were commissioned benefitting 10.56 lakh population.

Jalanidhi-II is a sequel to the Jalanidhi-I and is being implemented during 2012-18. The total population covered through Jalanidhi Project Phase I and II is 14.90 lakh as on 31.03.2017. Special efforts have been taken in the project design to include the poor and vulnerable user groups. This is done by constituting special category beneficiary groups (BGs) with lesser cash contribution than the general category BGs. The project has been so designed to incorporate the

beneficiary contribution either through cash or labour. There is also a separate Tribal Sub-Project, a special component for the tribal in the project area.

Details of District-wise population covered as on March 31, 2017 is given in **Appendix 4.2.24**. Sanitation activities of KRWS as on March 31, 2017 is summarised in **Appendix 4.2.25**. Total number of Ground Water Recharge (GWR) structure as on March 31, 2017 is 2,429. Most numbers of GWR structures are in Kottayam (833). There are no GWR structure made by KRWSA in Alappuzha and Ernakulam. Similarly, total number of Rain Water Harvesting tanks installed by KRWSA in the State are 24,666. The highest number of tanks have been installed in Idukki (7,149), followed by

Box 4.2.3

Projects with Community Participation to Address Water Scarcity

1. “Haritha Keralam” for sustainable initiatives in drinking water

Haritha Keralam Mission is a major initiative launched by the State Government and is one of the Missions under Nava Kerala Mission. Haritha Keralam mission aims to inculcate a new culture in conserving, utilising and sustainably managing the water resources of Kerala. Watershed based scientific interventions with clear outcome indicators and peoples’ participation would improve the water availability in the State to meet the increasing water demand. Preservation of natural water bodies, streams, re-charging of wells, promoting water re-use, increasing water use efficiency, water budgeting and new storages with locally feasible schemes would be taken up, ensuring convergence of all the stake holders.

2. Jalashree.

This scheme is to ensure sustainability of resource in the district of Thiruvananthapuram. Its main objective is to refurbish depleted water sources with public participation and is also aimed to achieve ‘Water literacy’. The activities include revival and protection of rivers. Though it is a joint project of the district Panchayat and the District Planning Committee, the project falls under the larger umbrella of the Haritha Keralam Mission of the State. This project aims at ensuring 100 per cent water availability in Thiruvananthapuram in three years.

3. Jalasouhridha Vidhyalayam (Water-Friendly Schools)

The aim of the project is to make school children realise the necessity of rain water conservation and ground water recharging. The project has been implemented in 840 Government schools of 14 district of Kerala. It is jointly done by Kerala Rural Water Supply Agency (KRWSA) and Education Department. The selection of schools under this programme is entrusted to the Education Department. The activities associated with this project include installing ferro cement tanks of 10,000 litre capacity for collecting rain water. Work is carried out as per the instruction of Mazha Kendram of KRWSA. This reserve of water has solved the problem of water scarcity in schools to certain extent. The programme is of greater importance under the current situation of extreme drought.

Box 4.2.4

Jala Samridhi Programme – Water Conservation Activities in Kattakkada

The project is aimed at replenishing and rejuvenating water resources in Kattakkada, in Thiruvananthapuram District. In order to sensitize and involve the students in water conservation activities, clubs were formed at the school level. Mass awareness programmes such as rallies and public functions were organized with the support of students, Kudumbashree workers, NGOs, National Service Scheme (NSS) units, youth clubs and Students Police Cadet. Apart from awareness programs, activities such as rejuvenation of ponds and artificial recharging of wells in schools were also taken up under this program. 'Jalamitram' volunteer groups are selected by Suchitwa Mission and Youth Welfare Board as part of Jalasmarudhi for protecting water resources. The project involves drawing water from abandoned granite quarries and routing the supply to a recharge pit that is positioned close to the targeted wells in a manner that facilitates gravitational flow of water. The flow of water from the quarry pits is regulated using a tap. As part of the programme, the catchment area of six ponds of Kattakkada Legislative Assembly has been covered with coir geotextile for water conservation. Rain pits have been proposed and as the first phase, rain pits has been done in 6 wards (one in each Panchayath) of the Kattakkada LA. A separate project for the reuse of used water in Malayinkeezhu School is on process. Kannancode ward in Pallichal Panchayat successfully recharged 10 wells using the water from the defunct granite quarries.

Support of Jananidhi: Communication and capacity development unit [CCDU] of Jananidhi had conducted a total of 7 trainings for the Jalasamridhi programme in Kattakkada. Out of the 7 training programmes, 6 were done at the Panchayat levels and one at the block level. The participants of the trainings were representatives of Schools (teachers and students), ASHA workers, Anganwadi teachers, Kudumbashree, Preraks, KSPU, NGOs etc. Training was imparted to these focused groups in water conservation, water quality issues, remedial measures, water quality testing of individual/common water sources with water quality field testing kit.

CCDU had provided 250 field testing kits and 2500 H₂S strips for bacteriological testing as well as result formats for result entry and got a feed back in 7066 tested results. The rest of the data is expected to be received by end of this month. The data analysis will also be done and cost effective water quality (WQ) remedial measures will be appraised to the rural public explaining the severity of WQ issues. The data base in WQ issues will be reviewed periodically and the awareness created to the public will enable GPs to periodically monitor the WQ. The CCDU is intending to make the GPs responsible for monitoring the WQ of the private and public water sources from which the rural population is drawing drinking water. This will be undertaken with the total involvement of the rural community and with the support of self help groups in the GPs.

Kottayam (4,664), Kasargod (2,765) and Palakkad (2,242) (**Appendix 4.2.26**). As per KRWSA data as on March 31, 2017, out of 5,072 schemes, 1,293 schemes are defunct. This is due to technical, social and financial issues which cropped up during its operation. Number of schemes implemented, functional and non functional as on March 31, 2017 is given in of **Appendix 4.2.27**.

Issues and Concern

Ever growing demand for safe drinking water is the major challenge for the State. Available sources of unpolluted water in the State are scarce and fast depleting. Transition to city centered growth may result in large concentration of population in various urban areas. This clubbed with lack of proper sanitation system, will pollute the available

Box 4.2.5

13th Five-Year Plan Working Group Recommendations on Drinking Water

- Focus on ensuring source sustainability, ensuring water quality and ensuring a robust institutional mechanism.
- Ensuring the equitability in implementation of schemes both in rural–urban areas in the case of piped water supply.
- Ensuring efficient governance.
- Strengthening the technical and managerial capacity of different tiers of local governments and the communities for implementing different and diverse models of service delivery.
- Proper documentation, collection and compilation of data and analysis, technical and technological up gradation for identification and prevention of leakages, time bound execution of projects and service oriented approach are needed.
- Work done by KWA, Janani, Local self Governments, Other Government Departments, nongovernmental organizations etc. in the drinking water sector may be brought in a common GIS platform so as to evaluate the work done and to find the water gaps so as to Plan for the future.
- A comprehensive data base has to be evolved along with interagency validations and the work done by various stake holders in water sector and has to be reviewed periodically. For this a cell has to be formulated with Water resources Secretary as Chairman and top officials from KWA, Irrigation, Land Use Board, CGWB, Soil conservation, Groundwater, Planning, LSGD, Janani, Central Water Commission, Coimbatore and Agriculture Department.
- Ensuring the plotting of artificial recharge the structure in a GIS frame work. For sustainability of drinking water sources, scientific constructions of artificial recharge structures are needed. A Post facto evaluation study is needed after construction of recharge structures. Sanction of the scheme in future should only on the basis of scrutiny of the data, so that duplication can be avoided.
- Quality assurance in the case of well water users by the local self governments is needed. Streamlining the Water quality labs and enlightening the public about water quality is essential.
- Pollution of water resources should be dealt strictly with the existing laws.
- Ensuring rain water harvesting and ground water recharging.
- Enhance the role of local self-governments in drinking water sector.
- Priority should be given to solve the drinking water problem of such areas which experience continuous water scarcity during drought for many years.

water sources. Industrial growth is also a major contributor in pollution of water sources. The magnitude of the drinking water crisis in our State demands expeditious implementation of mitigation measures to address the challenges faced today. The major areas that needs to be addressed on immediate basis are, water quality and pollution, ground water depletion, scarcity of rainfall, sewerage, non availability of data, streamlining or integrating the

activities of various agencies involved in drinking water and sanitation, rainwater harvesting, ground water recharge, harvesting the surface water runoff and drought. Use of local expertise in the construction and maintenance of water systems, flow of funds to the sector and construction of new water system would equip the State to address the challenges faced in the water sector.

4.3 SOCIAL JUSTICE

GENDER AND DEVELOPMENT

The Gender Inequality Index (GII) issued by UNDP every year since 2010 has placed India in the position of 125 in a list of 159 nations (Human Development Report, 2016). The GII captures the three core areas of gender inequality namely, 1) reproductive health (measured by maternal mortality ratio and adolescent birth rates), 2) empowerment (measured by proportion of parliamentary seats occupied by females and proportion of adult females and males with secondary education) and 3) economic status expressed as labour market participation; India however has scored a higher inequality score of 0.563 whereas the top 10 countries' score remained less than 0.05. This indicates the ineffective policies of our government and its gross failure to deal with gender inequalities. It is well known that India, unlike some other Asian developing economies, has posted very low female work participation rates (WPRs), which in fact have also shown a declining trend despite high growth rates since the mid-2000s. An IMF working paper says that India, which has one of the lowest female labour force participation rates among developing nations, needs to increase the number of women workers to boost economic growth. India's female labour force participation in 2011-12, at 33 per cent, was substantially less than the 50 per cent global average. 'Depending on the relevant policies, economic growth could increase by between 1.5-2.4 percentage points per annum,' the paper said (IMF, 2015)¹. Hence it makes economic and business sense to increase women's work participation rates. The Human Development Report published in the year 2015 observed that the continued plight of women in the country signify the "need of critical

policy intervention, proactive thinking and public policy to overcome systematic disadvantages of women" (HDR, 2015).

While the national scenario continues, the State of Kerala, known for its model of social development, reported counter currents with regard to the position of women in the State. The State has remained the only one in the whole country to have a consistent positive sex ratio with a proportion of 1,084 females for 1,000 males reported in the 2011 Census. The impressive record of the State with regard to human development indicators impacted on the status of women as well. In the Gender Inequality Index mentioned above the State's performance in terms of low maternal mortality rate, low adolescent birth rates and a high proportion of adult females with secondary education have remained quite impressive. However, the State is yet to improve its performance in order to translate its achievements with regard to two important indicators, increased participation of women in the realms of economy (labour market) and at higher levels of governance structures in politics.² The labour market participation and proportion of Parliamentary seats occupied by females show that Kerala's figures are very poor and even below the low all India average. This suggests a paradoxical situation, where the achievements of women in education and their health status remain quite impressive while at the same time their economic and political position (at higher levels) remains below average.

An intriguing question in the case of Kerala vis a vis all India is why despite a much smaller proportion

¹ "Women Workers in India : Why so Few Among so Many" Sonali Das et al. March 2015, WP/15/55.

² At the local level, over 50 per cent are elected women representatives which places Kerala among the top States.

of women engaged in collecting fuel, fodder and water³ as revealed by the NSSO data 2011-12 (as shown later) and hence a much lower burden of the most onerous tasks within the household, women in Kerala are increasingly exiting the work force even as job seekers. Female unemployment rates in Kerala are over five times the all India figures; in rural areas educated unemployment rate is as high as 25.8 per cent (9.7 per cent for all India). However, the unemployment rate has also shown a decline in the latest period and the proportion of work seekers among women has declined, suggesting a discouraged worker effect. The specified activities in the NSSO data are unable to capture specifically the work women do at home in Kerala. But even if they did, a large part of it would be unpaid or minimally productive and hence not perceived as work at all.

The State Planning Board constituted a Working Group on Gender as part of the formulation of the 13th Five-Year Plan (2017-22). It undertook a thorough review of the problems relating to (a) creating large scale employment for women and other vulnerable sections through necessary skill acquisition; (b) prevention of gender based violence, redressal and rehabilitation; (c) increasing public investment in women's unpaid household work, in particular child and elderly care; (d) strengthening gendered governance at the local level; (e) addressing problems of transgenders; and (f) integrating Gender Responsive Budgeting with the Planning process in each Department. Different sections of Working Group Report deal with women and work, education and skill development, migrant women workers, issues of marginalised sections, LGBTs and women and local governance (**Box 4.3.1**).

Box 4.3.1

13th Five-Year Plan Working Group on Gender

Working Group has made recommendations on *Women's Work, Employment and Skill Development* with five sets of policy links which indicate the need for proactive interventions in five areas:

- a) To address the burden of reproductive work;
- b) To address issues of regulation and implementation of measures to protect women wage workers;
- c) Interventions in governance to provide safe public infrastructure;
- d) Provide employment-linked components in the general education system;
- e) Use fiscal and other incentives to motivate employers to generate more and better job opportunities for women; and
- f) Have a campaign to draw women into available jobs. With these policy links several specific projects and schemes have been suggested by the Working Group.

Likewise, in order to address the gender based issues in education, several projects like gender sensitisation trainings to teachers and students, change in the curriculum, short term courses on gender etc. have been suggested.

Addressing *violence against women*, projects were suggested by considering three aspects of the issue, viz, prevention, redressal and rehabilitation. Working Group also discussed and made specific recommendations regarding the *critical areas for interventions* for LGBT. The Working Group identified and suggested a) Positive and protective measures to ensure access to secure livelihoods and adequate income; b) Full access to education and assured safety in educational institutions; c) Measures and institutional structures, including networks to ensure full citizenship; and d) Aid to protect privacy and affective ties/alternate domestic spaces for TG persons.

While addressing the area of *Decentralizing Governance and Centering Gender*, the Working Group has made specific recommendations on Gender Budgeting and Gender Auditing and Gender sensitive/gender transformatory planning at local bodies. The issues of women of vulnerable communities like dalits, fishing community and endosulfan affected areas have specially been addressed.

³ This implies that such basic services are better available to women in Kerala on average, though there would certainly be regions and socio-economic groups where deprivation is high.

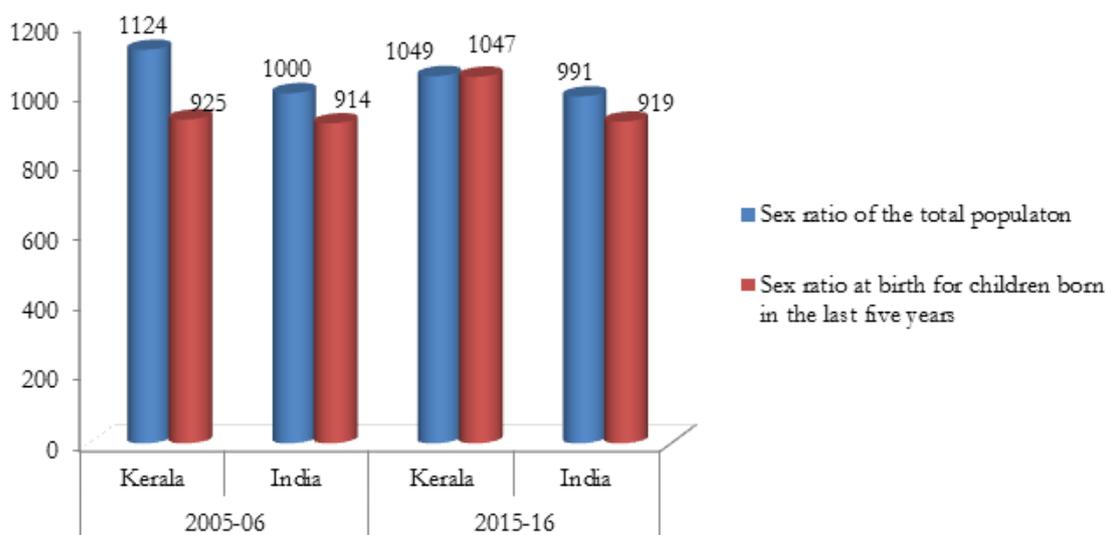
Demographic Features

With 52 per cent of the population consisting of women, Kerala is a State known for its positive sex ratio. The overall sex ratio of Kerala is 1,084 females per 1,000 males up from 1,058 in 2001 (**Appendix 4.3.1**). Though child sex ratio has remained more or less constant over the period 1991-2011, yet a fall from 963 in 2001 to 959 in 2011 was a matter of concern. Still, according to 2011 Census, the child sex ratio of Kerala was much better than the national average of 914. However, as per the National Family Health Survey of 2015-16, the sex ratio of age below five population is positive

towards girls. It is depicted in **Figure 4.3.1**.

The proportion of child population in the age group 0-5 constitutes 7.5 per cent while it is higher in India with 9.7 per cent. But the proportion of population in the age group of 60 years and above in Kerala is much higher (12.6 per cent) than that of all India average (8 per cent). The age wise composition of population as depicted in **Table 4.3.1** clearly indicates that the proportion of child population is lower than that of aged population in Kerala while the situation is reverse in the case of all India average (**Appendices 4.3.2, 4.3.3, 4.3.3, and 4.3.4**).

Figure 4.3.1.
Comparison of Sex Ratio – India and Kerala



Source: NFHS Report, 2015-16

Table 4.3.1
Percentage of Population in Different Age Groups by Sex and Residence

Age Group		Total			Rural			Urban		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Age Group 0-5	India	9.7	9.9	9.5	10.3	10.5	10.1	8.2	8.3	8
	Kerala	7.5	8	7.1	7.5	8	7.1	7.5	8	7
Age Group 0-14	India	29.5	30	28.8	30.9	31.5	30.3	25.5	26.1	24.9
	Kerala	23.2	24.8	21.7	23.3	24.9	21.8	22.8	24.4	21.4
Age Group 15-59	India	62.5	62.2	62.8	61	60.7	61.3	66.6	66.2	66.9
	Kerala	64.3	63.4	65	64.1	63.3	64.9	64.7	63.8	65.6
60 and above	India	8	7.7	8.4	8.1	7.8	8.4	7.9	7.6	8.2
	Kerala	12.6	11.8	13.3	12.6	11.8	13.4	12.4	11.8	13

Source: Census of India, 2011

The sex wise composition of population is favourable to women in Kerala for the group above 15 years of age in both urban and rural areas. Up to 14 years of age, the proportion of male population is higher both in India and Kerala though the difference is comparatively low in Kerala.

Literacy and Education

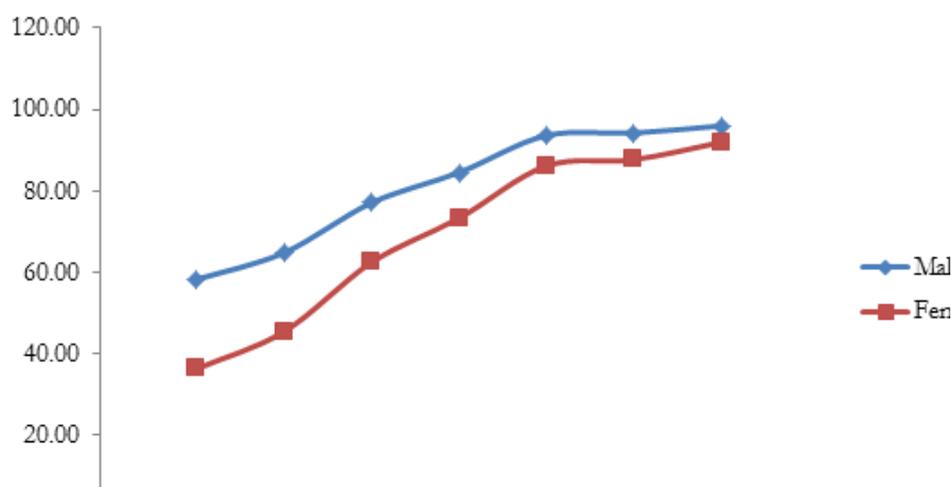
At 92 per cent, the female literacy rate in Kerala is the highest among Indian States. Still a small gender gap exists. But it is seen that the gender gap has narrowed during these 6 decades. (Figure 4.3.2).

The educational status of adult women as captured by National Family Health Survey also reveals

a positive picture of Kerala in comparison to the all India average. The percentage of women who completed 10 years of schooling and more in the State is more than double that of India (Table 4.3.2).

In case of education, enrolment is universal at the primary level and gender parity has been achieved; girl students constitute 48.98 per cent of total student enrolment in schools. Girls outnumbered boys in terms of enrolment in higher secondary education at 51.84 per cent. Dropout rates are low for both boys and girls. At the tertiary level also, the enrolment of girls is higher than boys. For example, girls constitute 68.6 per cent of total enrolment for degree courses in various Arts and Science colleges under the four general universities

Figure 4.3.2
Difference in Literacy Rates among Males and Females in Kerala



Source: Kerala State Literacy Mission Authority

Table 4.3.2
Educational Status of Adult Women (age 15-59)

Indicators	2005-06		2015-16	
	Kerala	India	Kerala	India
Women who are literate (%)	93	55.1	97.9	68.4
Men who are literate (%)	95.5	78.1	98.7	85.7
Population (female) age 6 years and above who ever attended School (%)	89.8	58.3	95.4	68.8
Women with 10 or more years of schooling (%)	48.7	22.3	72.2	35.7

NFHS-4, 2015-16

in Kerala during 2016-17. When post graduation is considered, the girls' position is highest with 69.24 per cent. Hence, girls perform well in terms of education in Kerala. But when the intake of girls in engineering colleges and polytechnics is considered, the situation is different. Out of the total enrolled students, girls constitute only 43.74 per cent in engineering colleges and 33.18 per cent in polytechnics (**Table 4.3.3**). The high levels of education of women do not; however, appear to be translated into marketable skills reflected in low levels of work force participation.

Health Status of Women in Kerala

In Kerala, most of the health indicators are highly favourable to women. Health indicators of women in Kerala are much better than their counterparts in the country as well as their male counterparts in the State. Life Expectancy at birth of women in Kerala at 76.9 years is the highest in India; much higher than for women in India as a whole, which is 67.7 years. As per the figures released by Registrar General of India, all the demographic indicators seem to be favourable to women of Kerala (**Table 4.3.4**).

Table 4.3.3
Enrolment of Girls and Boys at Different Levels, 2016-17

	Boys	Girls	Total	% of Girls
School Education	1,877,953	1,802,787	3,680,740	48.98
Higher Secondary	183,979	198,072	382,051	51.84
Graduation	81,448	177,962	259,410	68.60
Post Graduation	11,116	25,021	36,137	69.24
B Tech (Govt Colleges)	9,083	6,536	15,619	41.85
M Tech (Govt Colleges)	662	944	1,606	58.78
Total Engineering	4,404	3,424	7,828	43.74
Polytechnic	18,616	9,245	27,861	33.18

Source: DPI, DCE and DTE, 2017

Table 4.3.4
Health Status of Women in India and Kerala

Sl. No.	Indicator		Kerala	India
1	Death Rate		6.6	6.5
		Male	7.6	6.9
		Female	5.7	6.1
2	Infant Mortality Rate		12	37
		Male	10	35
		Female	13	39
3	Maternal Mortality Rate		61	167
4				
	Mean age at effective marriage	Male	27.3	23.2
		Female	21.4	20
5	Expectancy of Life at Birth	Male	71.4	62.6
		Female	76.9	67.7

Source: SRS Bulletin, Govt of India and Directorate of Health Services, Kerala

According to the National Family Health Survey Report of 2015-16, in Kerala as well as in India, the percentage of women whose Body Mass Index is below normal is high compared to their male counterparts even though compared to all India average Kerala women are better off. But in the case of obesity, the percentage of women in Kerala is higher than that of India as well as that of their male counterparts in the State. In case of anaemia, though Kerala's situation is better than that of all India average, it is seen that the percentage has increased between 2005-06 to 2015-16 (Table 4.3.5).

However the State has to do much more in certain areas which had been identified in the 11th Five-Year Plan but on which progress has been slow or has to be strengthened: (a) occupational health and (b) violence as a public health issue.

Occupational health

Despite the entry of women into the paid labour market, however low, the sexual division of labour within the household persists. An important consequence of combining the tasks of production and reproduction is that it affects the well being of women through strenuous long hours of work, with very short breaks and irregular meals, even more so if the work (transplanting of paddy, cashew shelling/peeling, coir spinning, cotton

spinning, handloom weaving, fish processing) is prone to occupational hazards. For the poor working women the wages received are no compensation for the high work intensity. The Welfare Funds which exist in most of these sectors do not normally provide health support; some do have provision for maternity benefit but very few are able to avail of it. Some steps have been taken by the Factories and Boilers Department to study the health hazards suffered because of being engaged in some specific occupations. A Study on "Health hazards of cashew workers" has already been completed and the Department is yet to undertake study in other areas. This area needs special focus.

Violence as a Public Health Issue

Gender based violence (GBV) is a human rights violation and is increasingly being recognised as a public health issue resulting in short term and long term health consequences, including mental illness and complications in pregnancy. The response of health services to domestic violence has now become an international priority in addressing GBV. The health care providers are most ideally placed to recognise victims of violence and to help them; to undertake screening for identifying women who experience violence which would lead to appropriate intervention and support. This requires intense training and gender sensitisation

Table 4.3.5
Key Indicators of Health Status – India and Kerala

Indicator	2005-06				2015-16			
	Kerala		India		Kerala		India	
	Male	Female	Male	Female	Male	Female	Male	Female
Body Mass Index (BMI) below normal (%)	21.5	18.0	34.2	35.5	8.5	9.7	20.2	22.9
Overweight or obese (%)	17.9	28.1	9.3	12.6	28.5	32.4	18.6	20.7
% of anaemic (age 15-49 years)	8.0	32.8	24.2	55.3	11.3	34.2	22.7	53
Blood Sugar high	NA				13.1	8.7	8.0	5.8
Hyper tension above normal	NA				7.5	5.5	10.4	6.7

Source: NFHS-4, 2015-16

of health providers. They need to learn to talk routinely and non-judgmentally to clients about violence, become more aware of signs to identify victims of violence. Schemes like Bhoomika and Seethalayam catering specifically to such women were initiated in the 11th Five-Year Plan and are playing a useful role; however, changes have occurred over the years with the National government announcing the One-Stop Centres in 2015 to provide all round support to women in distress. This year the Government of Kerala hopes to get sanction for 5 more centres besides the 9 they have already got. The centres will come up with the assistance of the Central Government and the National Health Mission (NHM) has introduced a Sexual Assault Forensic Evidence (SAFE) kit for doctors that would help them collect all samples in sexual assault cases. A major step of the current government which is for the first time in the country is that SAFE kit is being introduced for doctors in Kerala.

Women's Participation in Employment

In countries with high human development, the share of economically active women seems to be high. Labour Force Participation Rate (LFPR) of women in 10 countries having highest Human Development Index is around 60 per cent and that of men is around 70 per cent (Human Development Report, 2015). It is surprising to note that Female LFPR is much higher in some of our neighbouring countries, whose HDI rank is lower than that of India. For example Female LFPR in Bhutan is 66.4, in Cambodia is 78.9, in Bangladesh is 57.3, in Nepal is 54.3, and in Myanmar is 85.7.

(Source: HDI Report 2014).

While tremendous changes have occurred in women's employment in the last few decades with women moving into paid work outside the home, earning a wage and experiencing a semblance of autonomy, there is also a realisation of how much less they are paid than men a gender gap which not only has persisted but has increased over time. They are often still in part time jobs, or the growing informal economy with little protection

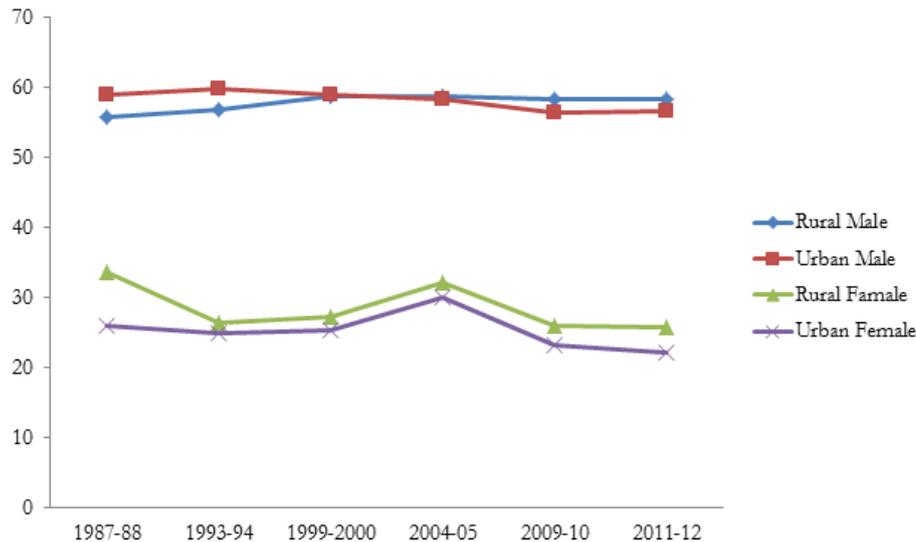
and few rights. At the same time data shows that young women surpass men in educational attainment (except in technical/engineering fields); in arts and sciences over half of the students are girls. However, their presence in the labour market has been lower than men and more worrying is the very slow progression into positions of leadership. As a recent ILO Report on gender gaps in the labour market reveals:

Gender gaps are one of the most pressing challenges facing the world of work today. Globally, women are substantially less likely than men to participate in the labour market, and once in the workforce, they are also less likely to find jobs than men. Indeed, their access to quality employment opportunities remains restricted. Overall, for example, women are more likely to work longer hours than men when both paid and unpaid work is taken into account. Moreover, when in paid employment, on average, women work fewer hours for pay or profit either because they opt to work part-time or because part-time work is the only option available to them. These gender gaps persist despite the preference of most women worldwide to work in a paid job – underlining the fact that women's choices are constrained by a number of factors (World Employment Social Outlook: Trends for Women 2017, ILO).

It cannot be ignored that less women in labour force means under-utilisation of human resources that holds back production and economic growth.

Women of Kerala outperform their male counterparts in many developmental indicators. But in the case of economically active persons, the outcome is not favourable to women. There are two major sources of data on workers, unemployed, and non-workers Census and the Quinquennial Rounds on Employment-Unemployment of the NSSO. Given the more inclusive definition of "worker" in the NSSO, the latter is generally used for understanding the employment situation in a country/State. The Census has the advantage of readily available data at a disaggregated regional

Figure 4.3.3
Labour Force Participation Rates of Male and Female in Kerala



Source: Various Reports of NSSO

level of the district or even lower. We have largely used the NSSO data in this write-up.

As per the 68th Round of NSSO (for the year 2011-12), a wide gap between male and female LPRs (principal and subsidiary status) is seen in the State. While the State average is 40.3 per cent, female LPR (per 100 persons) in Kerala is 24.8 per cent and that of male is 57.8 per cent. Consequently the difference between male and female LPR in Kerala is very high. Himachal Pradesh with a female workforce participation rate of 49.8 per cent is the best performer. It is surprising that the North-eastern States like

Nagaland, Sikkim, Manipur, Mizoram, Arunachal Pradesh and Meghalaya too have higher FWPRs than Kerala. Hence we have to relook at our strategies in this direction; the need to empower Kerala women with decent employment is urgent.

Disaggregating by region, we find that the labour force participation rate of women in rural Kerala is lower than that of India. But in urban areas, labour force participation of Kerala women is better than that of their counterparts at the all India level. **Table 4.3.6.**

A comparison of labour force participation of males and females in Kerala is shown in

Table 4.3.6
Labour Force Participation Rate for Kerala and India (per cent) Urban and Rural (PS+SS).*

Year	Rural				Urban			
	India		Kerala		India		Kerala	
	Male	Female	Male	Female	Male	Female	Male	Female
1987-88	54.9	33.1	55.8	33.6	53.4	12.9	59	26.1
1993-94	56.1	33	56.8	26.4	54.3	16.5	59.9	25
1999-2000	54	30.2	58.7	27.3	54.2	14.7	59.1	25.4
2004-05	55.5	33.3	58.9	32.1	57	17.8	58.3	30.1
2009-10	55.6	26.5	58.3	26	55.9	14.6	56.4	23.3
2011-12	55.3	25.3	58.3	25.8	56.3	15.5	56.7	22.2

Source: Various Reports of NSSO

* Refers to principal status plus subsidiary status, the most inclusive definition of worker

Table 4.3.7
Work Participation Rates of Males and Females in Kerala

Year	Rural				Urban			
	India		Kerala		India		Kerala	
	Male	Female	Male	Female	Male	Female	Male	Female
1987-88	53.9	32.3	56.7	31.6	50.6	15.2	59.2	21.8
1993-94	55.3	32.8	53.7	23.8	52	15.4	56	20.3
1999-2000	53.1	29.9	55.3	23.8	51.8	13.9	55.8	20.3
2004-05	54.6	32.7	55.9	25.6	54.9	16.6	54.7	20
2009-10	54.7	26.1	56.4	21.8	54.3	13.8	54.7	19.4
2011-12	54.3	24.8	56.5	22.1	54.6	14.7	55.2	19.1

Source: Various Reports of NSSO

Figure 4.3.3. It is seen that the gender gap is widening over the period. The gender gap in levels of employment is also brought out by the female work participation rates (**Table 4.3.7**) and while the male WPRs show a mild upward trend or constancy, there is a declining trend in female WPRs; that Kerala women have a higher participation rate in urban areas vis-a vis all India is also seen.

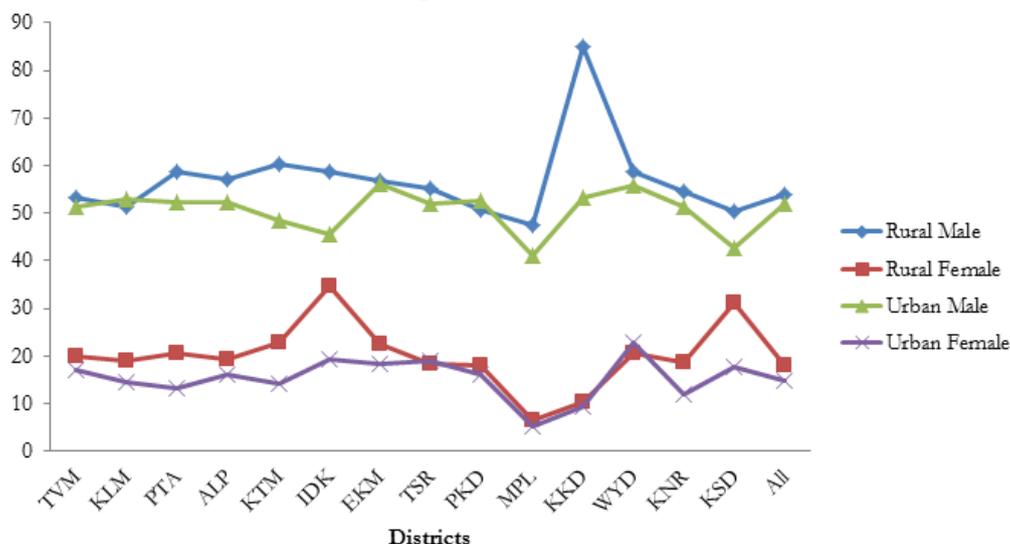
Table 4.3.8 reveals the district wise gender disparity in LFPR. Malappuram recorded the lowest Female LFPR with 12 per cent in rural areas and 8 per cent in urban areas while the respective figures for men are 49 and 43 per cent. Kasargod and Idukki districts have lower gender gap in LFPR both in urban and rural areas respectively. The gender disparity in LFPR is highest in Kozhikode both in urban and rural areas with the gaps of 43.6 and 44.5 respectively.

Table 4.3.8
Gender Gap in District-wise LFPR

District	Rural		Urban	
	Male	Female	Male	Female
Thiruvananthapuram	54.4	23.9	53	20.6
Kollam	53.3	21.6	54.2	28
Pathanamthitta	62.6	25.7	56.7	15.6
Alappuzha	58.9	24.8	56.4	22.2
Kottayam	61.9	26.2	52.1	18.7
Idukki	60.7	38.5	47.7	19.3
Ernakulam	58.9	25.9	56.9	22.2
Thrissur	56	20.3	54.5	20.9
Palakkad	51.9	20.9	53.9	16.8
Malappuram	48.9	11.6	42.4	7.6
Kozhikode	56.2	12.6	55.3	10.8
Wayand	61.4	22.3	56.1	27.9
Kannur	57.7	22	52.1	14.5
Kasargod	51.6	31.8	43.1	18.9
All	55.6	21.4	53.7	17.7

Source: NSSO 68th Round (pooled data, Department of Economics and Statistics, GOK)

Figure 4.3.4
Gender Gap in District wise WPR



Source: NSSO 68th Round (pooled data, Department of Economics and Statistics, GOK)

Gender Gap in Worker Population Ratio (WPR)

The gender gap in WPR under usual status is given in **Figure 4.3.4**. In both rural and urban areas, female WPRs are considerably lower than male WPRs. Among the districts, Idukki records the highest female WPR in rural areas (35 per cent) while female WPR in urban areas is highest in Wayanad with 23 per cent (**Appendix 4.3.6**). In both the sectors, Malappuram reported the lowest female WPR with 7 per cent in rural and 5 per cent in urban areas and Malappuram is preceded by Kozhikkode with 10 per cent in rural and 9 per cent in urban.

Both the Census and NSSO estimates depict a picture of low work participation rates of women. As is well known it has been debated extensively in the literature that work participation of women is much higher than what is measured, given the invisibility or non-recognition of economic work that women do at home. Both the investigator (from the official sources of data collection) and women themselves do not perceive the work status of home based women workers, despite intensive efforts at broadening the concept of work. To capture this to some extent, **Table 4.3.9** shows that a proportion of women who are enumerated as 'usually' engaged in household duties and hence

Table 4.3.9
Percentage of Females (of age 5 years and Above Usually Engaged in Domestic Duties in Usual Principal Status) in Specified Activities

S No.	Activity	All India Rural	All India Urban	Kerala Rural	Kerala Urban
		2011-12	2011-12	2011-12	2011-12
1	Maintenance of kitchen garden	23.3	7.8	16.5	11.3
2	Maintenance of animal resources	21.5	2.4	14.2	5.3
3	Free collection of fuel/cattle feed	43.5	5.3	16.5	3.6
4	Preparation of cowdung cake	40.9	4.6	0.7	0.1
4	Fetching water from outside	30.6	9.6	7.7	6.0
5	Sewing/tailoring etc	27.3	23.5	10.0	11.7
6	Tutoring own children or other children for free	6.8	12.0	12.2	13.7

Source: NSSO 68th Round: Participation of Women in Certain Specified Activities along with their Household Duties, Report No.559.

non-workers, perform a number of economic activities at home-like poultry keeping, kitchen garden, tailoring etc.

The role of self employment in enhancing the share of economically active women is very important in a State like Kerala where the educational level of women is very high and women appear unwilling to take up wage employment in low paid informal jobs. Surprisingly, even with a large number of opportunities for self employment, the share of female self employed workers seems to be significantly lower in Kerala than many other States in India. The percentage of female self employed workers (FSEW) in Kerala is 36.4 in rural areas and that in urban areas is 36.3. But in rural areas, percentage of FSEW is 89.5 in Arunachal Pradesh, 87.9 in Himachal Pradesh, 94.9 in Nagaland and 90.2 in Sikkim. In all these North Eastern States, FWPR is above 35 per cent (NSSO Report, 68th Round).

Gender disaggregated data on employment can capture more clearly a picture of women's economic involvement. The sectoral distribution of employment of women in Kerala (Table 4.3.10) shows that relative to men, a larger proportion of women are engaged in the agricultural sector. The percentage share of males engaged in service sector is much higher compared to females; however in the industry sector the relative proportions are not very different; but a further disaggregation would show that this is because large numbers of women are engaged in low productivity, labour intensive traditional industries like handlooms, khadi, coir and cashew.

Membership of females in different Welfare Fund Boards in Kerala shows the participation

of women in some specific industries (Appendix 4.3.7). It is clear that women's participation in traditional industries is very high in which wage/remuneration is comparatively low. For example, among cashew workers and beedi workers, women constitute 95 per cent and 99 per cent of the work force respectively.

Together with low and declining female work force participation rates in Kerala, the inferior economic position of women is aggravated further by high rates of unemployment, in particular of educated women (Table 4.3.11). This suggests that there are large numbers of women who are seeking or available for work but unable to find it. The fact that the unemployment rate shows a fall in the recent year, even as work participation rate has also declined suggests that one of the reasons could be a 'discouraged worker' effect pushing women out of the workforce due to long waiting periods in the labour market for work. Some scholars argue that the decline in female work participation rate could be on account of 'income effect', that is with a growth in household income there is a tendency for women to withdraw from labour force. Needless to state this requires further probing.

Inequality in Wage Rates

Women are engaged in agricultural work as well as in traditional industries (which are mainly coming under informal and unorganised sector) in India as well as in the State (Census, 2011). But in terms of wages and remuneration, significant gender inequality exists in unorganised sector. The prevalence of inequality in the wage rates among men and women especially in unorganised and agricultural works have been detailed in the section Labour and Labour Welfare of Chapter 4.

Table 4.3.10
Sectoral Distribution of Employment in Kerala

Persons	Agriculture	Industry	Service
Male	22.8	32.4	44.8
Female	31.9	30.4	37.7
Total	25.5	31.8	42.7

Source: NSSO Report, 68th Round.

Economic empowerment and social empowerment are complementary to each other. The economic empowerment of women is attained when they become an integral part of labour force and be gainfully employed without having to bear the full burden of household and care responsibilities. It is necessary that this is recognised, and efforts are taken to reduce and redistribute unpaid household and care work in more just ways promoting shared responsibility within the household, and the State playing a crucial role in designing appropriate policies/schemes that support its reduction and redistribution.

Women in Political Leadership

Political representation is taken as an important dimension to measure gender position in many of the indices currently being used. For example, Gender Inequality Index developed by UNDP measures empowerment by the proportion of parliamentary seats occupied by females. The Global Gender Gap Report brought out by World Economic Forum measures political empowerment, economic participation and opportunity, educational attainment and health and survival.

Achievements in health and education have empowered the women of Kerala and enabled them to take part in the practices of democracy. It is an essential condition for democratic citizenship which will be complete only when the women get

equal participation in direct decision making too. It is in this regard that the representation of women in legislative bodies becomes important. Political participation must not be restricted to casting votes during elections. Rather women must occupy leadership positions in decision making bodies. Women of the State can be empowered through their direct participation in policy making. An appropriate example is the local governments in Kerala, where 50 per cent of the seats are reserved for women including the higher positions in the local bodies.

However, gender empowerment is politically meaningful only if women have decision making powers in higher bodies like State legislatures and Parliaments. The developed nations with high HDI levels have a much higher representation of women in their legislative bodies. When the top 8 countries of Norway (39.6 per cent), Sweden (44.7 per cent), Iceland (39.1 per cent), Denmark (39.1 per cent), Belgium (38.9 per cent), Finland (42.5 per cent), The Netherlands (37.8 per cent) and Cuba (48.9 per cent) are considered, it can be seen that the percentage of women in legislative bodies is above 37 (The figure in parenthesis is the percentage of women in national parliament in respective country).

However, the achievements of the State with respect to women representation in the Central and State Legislative bodies is not noteworthy. The same is the case when we take women in India as

Table 4.3.11
Unemployment Rates (PS+SS) of Male and Female, Kerala and India

Year	Rural				Urban			
	India		Kerala		India		Kerala	
	Male	Female	Male	Female	Male	Female	Male	Female
1987-88	1.8	2.4	5.2	6.00	5.2	6.2	6.0	6.3
1993-94	1.4	0.8	5.5	6.6	4.0	6.2	6.6	18.7
1999-2000	1.7	1.0	5.7	5.6	4.5	5.7	5.6	20.0
2004-05	1.6	1.8	5.1	6.2	3.6	6.9	6.2	33.4
2009-10	1.6	1.6	3.2	2.9	2.8	5.7	2.9	16.8
2011-12	1.7	1.7	3.1	14.2	3.0	5.2	2.7	13.9

Source: Various Reports of NSSO

a whole. It is quite surprising that the women's status in the State in this regard is lower than that of many States in India as also the all India average (Table 4.3.12).

Crimes Against Women

As per the figures brought out by the State Crime Records Bureau, the total reported cases of crime against women are increasing over the period (Figure 4.3.5). The number of 'Rape cases' has increased from 500 in 2007 to 1,656 in 2016 (Appendix 4.3.8).

The 'cruelty by husband/relatives' still constitutes a major component in crime against women. Even when we want women to come out of their homes and take up employment, the safety of women is a serious issue. Greater efforts are required in this direction, to enable women to take up gainful economic activities outside the home.

Even though the absolute number of crimes is increasing over the years, it is seen that the proportion of crimes is decreasing. The incidence of crime per lakh of female population has decreased from 1.9 in 2007 to 1.1 in 2016. (Table 4.3.13).

Transgender Policy in Kerala

It is known that in Kerala, though women may secure many capabilities, often it does not get converted to desired functionings. But the survey conducted by the Social Justice Department on TGs reveals that they are unable to acquire even basic capabilities essential to a life of well-being and dignity. While women's interests and expressed needs are now accepted, at least partially, widespread and intense conservatism denies the same status to the interests and demands of people of non-normative sexual orientations, and though they have gained legal recognition, they face terrible invisibility and violence. "The condition of non-normative sexualities in Kerala cannot be described as only that of deprivation-then lack of resources that cause ill-being. Rather, it is better described as abjection – which refers to a form of

'enforced invisibility' of these people in the eyes of civil society and the State" (Draft Report of Working Group on Gender, State Planning Board, 2016).

Hence, interventions for inclusion of TGs cannot be limited to merely economic measures. The recent Supreme Court judgments, have given some space to remedy certain of the issues of TGs. While the recognition of all non-normative sexual orientations as legal remains a distant dream still, the Honourable Supreme Court of India (vide Judgment dated April 15, 2014) firmly established the right to equality and equal protection for transgender persons (TGs) and emphasised their right to live free from discrimination on the ground of gender identity. Following the Supreme Court Judgements, to understand the issues faced by TGs, the Social Justice Department of the Government of Kerala (GOK) conducted a State-wide survey seeking information on all aspects of their social and personal life. The survey, which collected information from over 4000 TG individuals, indicated that their population in Kerala may be over 25,000.*

Kerala is the first State in India which declared a Transgender Policy in 2015. GOK has issued a rights based State Policy for Transgenders within a clear results framework. In addition, consistent with the 2014 Supreme Court judgement, the policy allows for the self-identification of a person as a Transgender. The Policy also recommends the establishment of District-level TG Boards that can register TGs and issue identification cards. The Department of Social Justice is planning to establish these Boards as soon as a government order is issued.

Gender Budgeting

As policies and programmes have a differential impact on women and men, it is necessary to strengthen Gender Responsive Budgeting. Gender Budget is not a separate budget for women but one in which gender has been put on

*Department of Social Justice, State Policy for TGs in Kerala, 2015, p.8

Table 4.3.12
Women Representation – India and Kerala

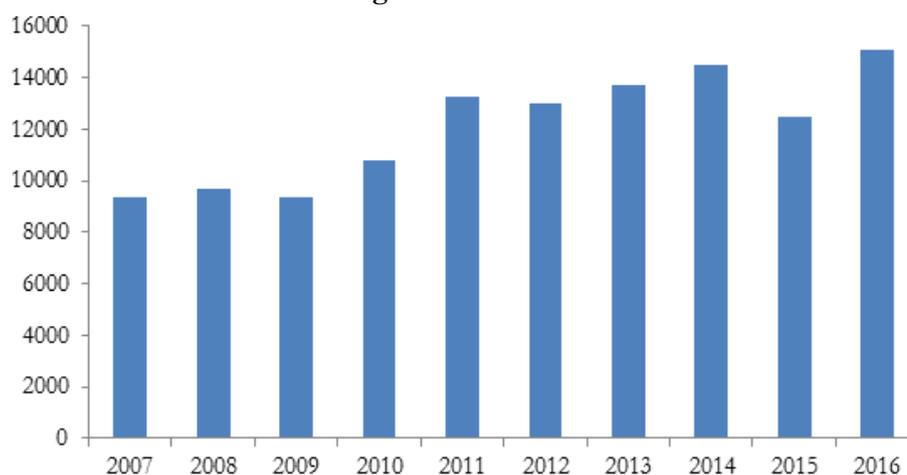
Lok Sabha						
Year	All India			Kerala		
	Total No. of Seats	Women	% of Women	Total No. of Seats	Women	% of Women
2009	543	58	10.7	20	0	0
2014	543	62	11.5	20	1	5
Kerala Legislature						
Kerala Legislative Assembly		Number of Women	Total no of seats	%		
2006		7	140	5		
2011		7	140	5		
2016		8	140	6		

Source: Worked out from data available at the Website of the Lok Sabha, Rajya Sabha and Chief Electoral Officer, Kerala

the mainstream. The Gender Budget Statement is an important tool for bringing together all information regarding allocations for women. It is now considered as an instrument to address gender inequality and reallocate the resources more favourably to women. It serves as a reporting mechanism and provides an indication of funds flowing to women. Gender Budgeting is a major step in strengthening inclusive growth Kerala is perhaps the first State to undertake a 'gender aware planning' aimed at a transformatory outcome for women even earlier within the

context of decentralised planning in the 9th Five-Year Plan Period. With the inclusion of Women Component Plan (WCP) in local bodies' Annual Plan, an attempt at integrating gender into the budgeting process, a gender-responsive budgeting was introduced in the State of Kerala at the time of the 9th Five-Year Plan itself. With the devolution of 35 to 40 per cent of funds from the State to the Local Self-Government Institutions (LSGIs), the first form of Gender budgeting was seen in the State in 1996 where each Panchayat was directed to prepare a chapter

Figure 4.3.5
Crime Against Women in Kerala



Source: Crimes Records Bureau

Table 4.3.13
Incidence of Crime Against Women (per lakh of population)

Year	Estimated female population (in lakh)	No of crimes reported	crime per lakh
2007	17,426	9,381	1.9
2008	17,594	9,706	1.8
2011	17,379	13,279	1.3
2016	17,366	15,114	1.1

Estimated from the data from Crime Records Bureau

on the status of women in their development Plan document, 10 per cent of the Plan outlay of the local bodies had to be set apart for needs of women or women specific projects. Percentage of Plan allocation and expenditure on WCP of local bodies during 11th and 12th (first three years) are given in **Table 4.3.14**.

It is seen from the table that though 10 per cent is mandatory, in terms of allocation and expenditure, more than 10 per cent of the fund goes to women. Compared to 11th Five-Year Plan, percentage of WCP allocation and expenditure has fallen during 12th Five-Year Plan. Allocation has fallen from 13.22 per cent to 8.84 and expenditure from 12.35 to 10.22. The WCP allocation for the last

Box 4.3.2

Schemes/Programmes under various Departments for Transgenders in Kerala

During 13th Five-Year Plan, it is proposed to implement specific programmes/schemes mainstreaming these people into the society.

- Literacy and Equivalency Programmes for transgenders (KSLMA).
- Transgender Helpline (24x7) and crisis management centre with the help of accredited NGOs working in the field of transgenders (Social Justice Department).
- Financial assistance for vocational training and self-employment (Social Justice Department).
- Pension for destitute transgenders above the age of 60 years (Social Justice Department).
- Organizing welfare programmes with accredited NGO and CBOs working for the welfare of transgender population (Social Justice Department).
- Provide financial assistance for proper education as incidence of school drop-out is high; Sex Re-assignment Surgery (SRS) in government hospitals based on medical advice, opening HIV zero surveillance centre for transgenders (Social Justice Department).
- Sensitize the public especially parents and family members, teaching and non-teaching staff and student community of educational institutions, officers of Health Department, LSGD, Employment Department and Labour Department (Social Justice Department)
- Scholarship for transgender students (Social Justice Department)

Source: Plan Documents, Government of Kerala

Table 4.3.14
Percentage of Allocation and Expenditure of WCP Projects to the
Total Allocation and Expenditure

Five Year Plan	% of WCP allocation	% of WCP Expenditure
11th Plan	13.22	12.35
12th Plan	8.84	10.22

Source: IKM2017

two year of 12th Five-Year Plan is below the mandatory figure (**Table 4.3.15**).

Since then, there has been considerable debate on the type of schemes/projects implemented under the WCP, some of which may not be gender sensitive. While the special attention given to gender in decentralised planning has left some positive imprints on outcomes and a number of good practices can be identified across the State, WCP has fallen short of expectations on advancing gender equality and is being reviewed in the context of the renewed emphasis on LSGIs and people's participation in the 13th Five-Year Plan.

A conscious attempt was made at Gender Responsive Budgeting in Kerala's 11th Five-Year Plan, integrating gender into the Planning/Budgeting process with a visible increase in Annual Plan allocations flowing to women over the years addressing women's felt needs, including women friendly infrastructure. The problem has been that since many projects benefit both women and men it may not be possible to capture a total estimate of the resource outlay for women due to non-availability of gender differentiated data.

The 13th Five-Year Plan is focussing on Gender Responsive Budgeting. As per the Guidelines of 13th Five-Year Plan, all departments have been directed to address the gender perspective needs during the formulation and implementation of the plans. Since women are more vulnerable, greater focus will be on ensuring that women are mainstreamed in all possible ways. The initiative

on Gender Responsive Budgeting aims at categorisation of specific schemes/components/programmes with a direct focus on women and girls. 13th Five-Year Plan aims to include the specific need based programmes to address the concern of women/girls wherever feasible.

The important schemes benefiting women under the major departments are given in **Table 4.3.16**.

It can be seen from the above that development policy in Kerala has been more sensitive to gender equality in terms of human resource development as reflected in the much lower gender gap in basic capabilities, such as education and health. However, this did not result in improving women's position in society. The high ranks in both literacy and health did not translate into growth of paid employment for women nor into upward occupational mobility; female work participation rates (WPR) in Kerala remain low, even among the educated women; levels of gender based violence remain high and insecurity in the public sphere are the disturbing trends. Patriarchy in contemporary Kerala is apparent in a generalised social commitment to women's domestic role, implicit in their withdrawal from the labour force aggravated by high levels of unemployment in particular educated unemployment.

Table 4.3.15
Allocation and Expenditure of WCP Projects to the Total Allocation and Expenditure
(During 12th Five-Year Plan)

Year	Allocation			Expenditure		
	Total	WCP	% of WCP	Total	WCP	% of WCP
2012-13	3870.32	431.01	11.14	2741.97	294.20	10.73
2013-14	5057.59	530.34	10.49	3918.27	407.47	10.40
2014-15	9914.79	613.16	6.18	4033.94	441.32	10.94
2015-16	6069.18	604.57	9.96	4467.76	433.43	9.70
2016-17	6629.98	610.44	9.21	3839.88	366.35	9.54
Total	31541.86	2789.52	8.84	19001.82	1942.77	10.22

Source: Annual Plan Documents

Table 4.3.16
Major Schemes Benefiting Women Under Various Departments

Sl. No.	Name of the Scheme	Objective of the scheme
Agriculture and Allied Sectors		
1	Theeramythri and micro enterprises scheme	Stabilization package to promote diversifications in livelihood activities and to improve the income level of fishermen families through women members of the family
Rural Development Sector		
2	Indira Awaaz Yojana (IAY)	Comprehensive rural housing programme of GOI provides dwelling units to the homeless rural poor
3	Mahatma Gandhi National Rural Employment Guarantee Programme	Flagship programmes of GOI for employment generation. Majority of beneficiaries are women
Industries		
4	Mahila Coir Yojana	First women oriented self-employment scheme in the Coir industry which provides self-employment opportunities to the rural women artisans
Health Sector		
5	Women Health Care Centre (Seethalayam)	Seethalayam provides homeopathic treatment. to women.
6	Bhoomika – Gender Based Violence Management centre (GBVMC)	Provide counseling services and medical and legal assistance to the victims of gender based violence.
7	Maternity hospitals, maternity units, Women and children hospitals (included in Ayurveda and Modern Medicine)	For special infrastructure and facilities for women and children
SC and ST Development Sectors		
8	Assistance for Marriage of SC girls	₹50,000 for the marriage of SC girls below BPL
9	Assistance to Marriage of ST girls	₹50,000 for the marriage of ST girl and ₹1 lakh for the marriage of ST orphan girl
10	Janani Janma Raksha	Provides maternal care

11	Housing scheme for the Divorcees/Widows/Abandoned Women	Housing scheme for the women in these categories
Education		
12	Sarva Siksha Abhiyan	To ensure universal elementary education
13	Counselling and training programmes for adolescents girls	The programmes are conducted by Directorate of Public Instruction as well as by Directorate of Higher Secondary Education to create awareness
Social Security and Welfare Sector		
14	Institutional care to women	There are 17 welfare institutions under the aegis of Social Justice Department (SJD) for the care, protection and rehabilitation of women in distress
15	Pension schemes for women	Indira Gandhi National Widow Pension (IGNWP) and pension for unmarried women above 50 years are the major pension schemes.
16	Nirbhaya	Envisages setting up of Nirbhaya Homes for sexually abused women. It imparts skill development training for providing employment opportunities. 10 such homes were started in 9 districts and 200 women were provided shelter.
17	SOS Model Homes for Nirbhaya Inmates	Envisages to arrange shelter to Nirbhaya inmates just as in SOS homes
18	Maternity Benefit Programme	Provides cash assistance to pregnant and lactating women from the end of first trimester of pregnancy upto 6 months after delivery
19	One Stop Centre	To support women subjected to violence, in private and public spaces
20	Swadhaar Greh	To cater to the primary need of shelter, food, clothing, medical treatment and care of women in distress and who are without any social and economic support.
21	Ujjawala scheme	Prevention of trafficking and rescue, rehabilitation and re-integration of victims of trafficking for commercial sexual exploitation
22	Gender Park	It is a platform where the State, Non-Government organizations (NGO), academia and civil society can come together for learning and research on gender equality as well as to formulate innovative and new interventions to support the empowerment of women and gender equality
23	Beti Bachao Beti Padhao	Financial assistance to the State to empower the girl child and enable her education
24	Snehasparsham	Aims to address the problems of unwed mothers
25	Rajiv Gandhi Scheme for Empowerment of Adolescent Girls	It aims at empowering the nutritional and health status of the adolescent girls in the age group of 11-18 years
26	Kerala Women Commission	The Commission implements gender awareness programmes and undertakes legal workshops/seminars, adalaths, and DNA test, etc.
27	Kerala State Women's Development Corporation	Self-employment schemes for women, flagship programme on gender awareness and finishing school for girls/women (largely from the poorer households) are the major programmes of the Corporation
Local Self Government Department		
28	Kudumbashree	State's poverty alleviation scheme focussing on women members of the family. Kudumbashree works through the Community Organisations at the grass root level.

Source: Plan Documents

Box 4.3.3 Gender Vulnerability Index

Over time policy approaches to women have changed, from 'welfare' to 'development', 'empowerment' and now 'inclusion', seemingly towards more gender favourable outcomes. There has been a proliferation of policies, programmes and schemes since then, to assist poor women and address gender gaps in social, economic and political spheres. This has been reflected in the Gender Vulnerability Index (GVI) estimated by Child development NGO Plan India which says that Kerala (with GVI of 0.634) is the safest place for girls in the country next to Goa (with GVI value of 0.649). The composite index has been developed by the research team for the NGO's Plan for Every Child campaign which is aimed at comprehensively understanding the dimensions of various problems affecting children, particularly girls, in difficult circumstances. The GVI report was released by Plan India on November 1 during its national conference in Delhi. This index provides a State-wise ranking which is calculated by analysing four issues pertinent to the situation of girls — child safety/protection, poverty, health and education. The State-wise GVI and ranks are given the **Appendix 4.3.9**.

DEVELOPMENT OF WEAKER SECTIONS (SC/ST/OBC/MINORITIES)

Welfare of Scheduled Castes, Scheduled Tribes, Other Backward Classes, Minorities and Forward Communities

In India, as per Census 2011, population of SC is 16.6 per cent and ST is 8.6 per cent, together forming a quarter of the total population. The Scheduled Caste population of Kerala is

3,039,573 persons constituting 9.10 per cent of the total population of the State. The Scheduled Tribe population of Kerala is 484,839 persons, constituting 1.45 per cent of the total population of the State. The population of Scheduled Castes and Scheduled Tribes as a percentage of total population in India and Kerala is given in **Table 4.3.17**.

Table 4.3.17
Population of Scheduled Castes and Scheduled Tribes as a Percentage of Total Population, India and Kerala

Year	SC		ST	
	India	Kerala	India	Kerala
1981	15.81	10.01	7.83	1.03
1991	16.48	9.94	8.08	1.10
2001	16.23	9.81	8.15	1.14
2011	16.60	9.10	8.60	1.45

Source:- Census 1981,1991,2001,2011

The number of Scheduled Castes is highest in Palakkad district (13.29 per cent) followed by Thiruvananthapuram (12.27 per cent), Kollam (10.80 per cent), Thrissur (10.67 per cent) and Malappuram (10.14 per cent). These five districts together accommodate 57.17 per cent of the total Scheduled Castes in the State. The Scheduled Tribes in Kerala are not only geographically concentrated, but are overwhelmingly rural. The highest concentration of Scheduled Tribes is seen in

Wayanad district (31.24 per cent) followed by Idukki (11.51 per cent), Palakkad (10.10 per cent) and Kasaragod (10.08 per cent). District wise Scheduled Caste/Scheduled Tribe population details are given in **Appendix 4.3.10 and 4.3.11**. A comparative picture regarding literacy and sex ratio of Scheduled Castes and Scheduled Tribes population in Kerala with national level is furnished in **Appendix 4.3.12**.

The Work Participation Rate of Scheduled Caste

Box 4.3.4

Working Group Recommendations

State Planning Board had constituted Working Groups on Scheduled Caste Development and Scheduled Tribe Development for suggesting strategies and guidelines for the XIII Five-Year Plan. Major recommendations of the Working Group are the following.

A. Scheduled Castes Development

1. Distribute a minimum of one to five acres to each landless and land poor Scheduled Caste labour households out of the lands already held by the government and de jure recovered from illegal occupants in the State. Distribution of fallow and other crop lands on lease to SC labourers.
2. Arrangements for special coaching, mentor support, financial help etc. are needed to promote higher studies especially for professional courses. Scheduled Caste organizations must be selected for managing institutions to promote education of their children on par with the rest of the population like other private managements in the State.
3. Concerted effort is, required to fill up the backlog of reserved vacancies in government through a special recruitment drive in the State.
4. Special schemes for health are required. It may be better covered under a comprehensive medical insurance scheme appropriately evolved under government sponsorship
5. Training for the development of entrepreneurship skills have to be imparted to enable the youth to start their own business ventures in collaboration with start-up mission and other agencies. Focus should be to introduce new skills and employment oriented courses.
6. Legislation for SCSP/TSP Act—For Regulating SCSP Funds to fully benefit the Scheduled Communities.

B. Scheduled Tribes Development

The strategy for Scheduled Tribes Development during the XIII Five-Year Plan period should be framed on the basis of the following objectives.

1. Speeding up the process of social and economic development.
2. Elimination of exploitation
3. Improving the quality of life
4. Building on the innate strengths of tribal people and make them self-reliant.
5. Taking legislative and executive measures/programmes for prevention of land alienation and restoration.
6. Innovative strategy for improving quality and quantity of public service delivery.
7. Dovetailing Central and State Government Tribal Development strategies.
8. Sustainable natural resource management and environment protection.
9. Participatory and community managed development.
10. Preservation of social and cultural values.
11. Convergence and synergy of activities of various stakeholders

Source: Working Group Report on SC, ST

and Scheduled Tribes is given in **Appendix 4.3.13**. In Kerala, as per Rule 14 (a) of the Kerala State and Subordinate Service Rules 1958, provision for reservation in appointment has been made for Scheduled Castes/Scheduled Tribes in Gazetted, Non-Gazetted and Last Grade Categories in Government Departments. As per the Annual review on January 1, 2017, the total representation of Scheduled Castes and Scheduled Tribes in public service is 12.79 per cent. As on January 1, 2017, reviews of only 33 departments were completed out of the 82 departments. Details of representation of SC/ST employees in Government service is given in **Appendix 4.3.14**.

Development Programmes for Scheduled Castes and Scheduled Tribes

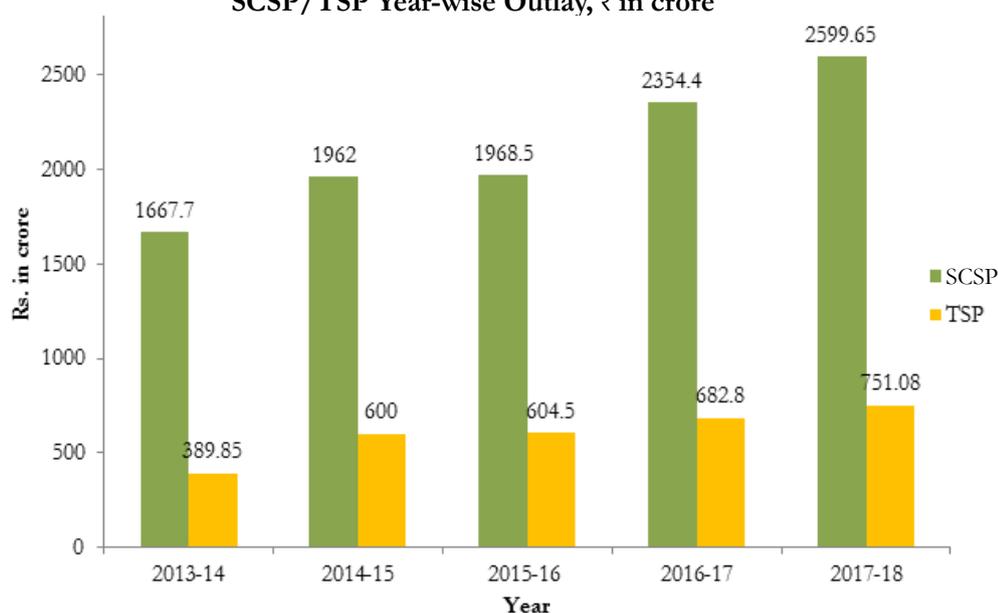
The outlay for Scheduled Caste Sub Plan (SCSP) and Tribal Sub Plan (TSP) is fixed as a percentage of the total Plan outlay to the State, in proportion to their population. Out of the total SCSP/TSP Plan outlay, a certain percentage of funds are allocated to Local Governments for implementation of schemes under decentralized planning and the remaining to the SC/ST Development Departments. A system of

earmarking certain amount of SCSP/TSP as pooled fund under SCSP and TSP was introduced in 2009. This fund is for taking up schemes on project basis, which provides scope to have a range of schemes for the all-round development of the targeted groups. The total Plan provision set apart for the development of Scheduled Caste and Scheduled Tribes during 2016-17 was ₹2,354.40 crore and ₹682.80 crore respectively. During 2017-18, allocation to Scheduled Caste Development Department was ₹2,599.65 crore and ₹751.08 crore was the allocation to Scheduled Tribes Development Department. Year-wise details of allotment from 2013-14 to 2017-18 are given in **Appendix 4.3.15** and in **Figure 4.3.6**.

Programmes of Scheduled Castes Development Department

Plan fund devolved to Scheduled Caste has been earmarked as Plan allocation to the department and the local governments. Centrally Sponsored Schemes and schemes/projects included in State Plan for the development of Scheduled Caste population are implemented by the Scheduled Caste Development Department. Education, training, research oriented

Figure 4.3.6
SCSP/TSP Year-wise Outlay, ₹ in crore



Source: Budget Documents

programmes etc. are undertaken by various institutions under the Department. Major institutions, for the welfare of Scheduled Castes, managed by the department are given in **Box 4.3.5**.

Performance Review of XII Five-Year Plan

During the XII Five-Year Plan ₹9,326.98 crore was earmarked as SCSP flow from the aggregate State Plan provision of ₹95,010.00 crore. This accounts to 9.81 per cent of the State Plan. Of which, ₹4,780.09 crore was allocated for SC Development Department and ₹4,546.89 crore for the Local Self -Governments. Of the actual budgeted amount, the Scheduled Caste Development Department expended 81 per cent (₹3,855.19 crore) for the implementation of various schemes. ₹6,244.90 crore was allotted to Local Self Governments including opening balance for

implementing various schemes under SCSP. Of this, ₹3,942.30 crore was expended (66.10 per cent). Year-wise outlay and expenditure incurred during the Plan period is given in **Table 4.3.18**. Major achievements during the Plan period are given in **Appendix 4.3.16**.

Major Schemes of SC Development Department

Scheduled Caste Development Department undertake programmes including education, economic development and social welfare, cultural programmes and services based on law. In 2016-17, an amount of ₹1,099.91 crore was expended out of the budgeted outlay of ₹1,315.50 crore (84 per cent). In 2017-18, out of ₹1,427.60 crore, ₹234.26 crore was expended as on August 31, 2017. Scheme-wise outlay

Box 4.3.5

Major Institutions Under Scheduled Castes Development Department

Sl No.	Name of Institution	No.	Available Facilities/concessions
1	Nursery Schools	85	Admission for 30 students only. Daily feeding charge- ₹30, Uniform charge- ₹600, Lump sum grant - ₹190.
2	Model Residential schools (including Ayyankali Memorial Government Model Residential Sports School)	10	Admission is given for students from 5th standard onwards. Parent's annual income should be less than ₹1.00 lakh. Food allowance of ₹2500 per month for students upto 10th standard, ₹2875 for +2 students, ₹200 per day for sports MRS students. Monthly pocket money of ₹119 up to 10th standard, ₹150 for +2 students. Uniform allowance of ₹3750 and travelling allowance for home visit during holidays are also provided.
3	Pre-matric hostels for girls and boys	87	Admission from 5th standard. Two sets of uniform, food, chappal, bag, monthly pocket money of ₹130, travelling allowance for home visit during holidays. Food allowance is ₹2000 per month.
4	Post-matric hostels for girls and boys (10 for boys and 7 for girls).	17	Food, pocket money of ₹190, travelling allowance for home visit during holidays. Food allowance of ₹2,300 per month.
5	Pre-Examination Training Centres	4	Training with stipend in medical/engineering entrance, job oriented courses and other competitive examinations
6	Institute of Civil service Examination Training Society (ICSET)	1	Admission for those who are selected in the State level entrance examination, one year training is given for participating in all India level competitions. Accommodation facilities and library facilities are also provided.
7	Industrial Training Institutes	44	Fees concession, uniform allowance ₹900, lump sum grant (₹820 for 1st year and ₹630 for 2nd year), monthly stipend of ₹630. Tuition provided to the candidates who have failed in All India level trade test.
8	Centre for Research and Education for Social Transformation (CREST) Kozhikkode (an autonomous institution)	1	Provide three weeks orientation course to enable students to actively involve in curricular and co-curricular activities in the engineering colleges and to improve their learning and communication skills. The candidates will be provided mentoring support from CREST throughout their four year B.Tech Degree course. The expenses of the students towards travel, food and accommodation will be met by CREST.

9	Medical College, Palakkad	1	Admission for MBBS course for 70 SC students, 19 treatment units, 500 beds.
10	Para medical institutes at Trivandrum and Thrissur	2	Health Inspector course for 57 (40 SC, 9 ST, 8 Gen) students in Kuzhalmannam, Palakkad and Diploma in Medical Laboratory Training course in Pilathara, Kannur, 2 batches with 27 students. Lump sum grant ₹850, Actual Boarding and Lodging Charge ₹3500, Pocket money ₹190 per month.
11	Model Residential Polytechnic, Palakkad	1	Admission is given for 30 students.
12	Community College-Vadakkanchery	1	Training is given for 20 students in a modern high-tech course, Certificate Programme in principal machinist including one year institutional training and one year industrial training. Stipend ₹1,500 for hostelers and ₹500 for day scholars, lump sum grant ₹630. Study tour allowance ₹2,500 per student.
13	Cybersri	1	Special Support and Mentoring Programme for 60 students, ₹1,000 monthly stipend.

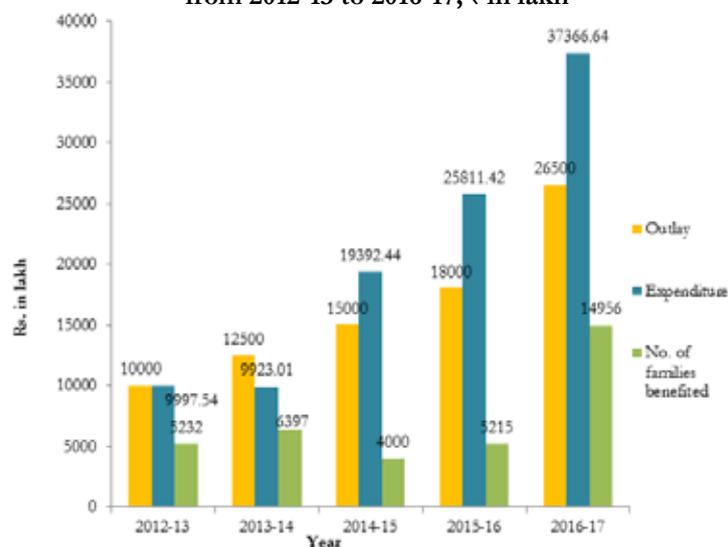
Source: SC Development Department

Table 4.3.18
Outlay and Expenditure of SCSP Schemes by the SC Development Department and LSG in the XII Five-Year Plan, ₹ in crore

Year	Total Allocation	% Allocation of SCSP to State Plan	LSGs			Department	
			Outlay BE	Fund Available	Expenditure (including OB)	Outlay	Expenditure
2012-13	1,374.38	9.81	824.63	1,066.56	665.97	549.75	519.48
2013-14	1,667.70	9.81	828.20	1,209.06	882.48	839.50	790.16
2014-15	1,962.00	9.81	927.58	1,253.97	811.55	1,034.42	693.45
2015-16	1,968.5	9.84	927.58	1,370.27	856.28	1,040.92	752.19
2016-17	2,354.40	9.81	1,038.90	1,345.04	726.02	1,315.50	1,099.91
Total	9,326.98	9.81	4,546.89	6,244.9	3,942.3	4,780.09	3,855.19

Source: Budget Estimates

Figure 4.3.7
Outlay and expenditure of housing scheme and number of families benefited from 2012-13 to 2016-17, ₹ in lakh



Source: Scheduled Caste Development Department

Box 4.3.6 Major Schemes of SC Development

Name of Schemes	Objectives	Achievements
Educational Schemes	<p>Provide educational assistance to</p> <ul style="list-style-type: none"> • Pre-matric studies • Post-matric studies • Running of Model Residential Schools • Functioning of ITIs 	In 2016-17, ₹1,32.59 crore was expended for educational schemes. In the year, Primary education aid was provided for 133,420 students and 392,836 students availed Pre-matric lumpsum-grant. Post matric scholarship was given to 182780 students through central assistance. Lap tops were supplied to 2,322 number of SC students and Stethoscopes to 313 medical students. Entrance coaching grant was given to 657 students. Ayyankali scholarship was given to 1,199 students. Details of lumpsum-grant, stipend, pocket money, paying guest fees etc. provided to Scheduled Caste students in 2016-17 is given in Appendix 4.3.19 .
Housing Scheme	<p>Financial assistance for</p> <ul style="list-style-type: none"> • House to houseless • completion of partially constructed houses • Improvement of dilapidated houses 	In 2016-17, 14,956 families benefited from the scheme (Figure 4.3.7). Sanction was given for the construction of 7,000 new houses in 2017-18 and construction activities are progressing. (Appendix 4.3.20).
Land to Landless	Purchase of land to the poor and eligible landless SC families for house construction	In 2016-17, an amount of ₹174.89 crore was expended (100 per cent) for the scheme benefitting 4,465 persons. An amount of ₹180.00 crore is earmarked for the scheme in 2017-18. The expenditure as on 31.08.2017 is ₹29.60 crore benefitting 1,384 persons (Appendix 4.3.21).
Development programmes for the vulnerable communities among Scheduled Castes	<ul style="list-style-type: none"> • Rehabilitation of landless and homeless SCs belonging to vulnerable communities by providing assistance for purchase of five cents of land and assistance for house construction. • Providing infrastructure, connectivity, communication facilities, education, treatment, drinking water, electricity, road etc. 	In 2016-17, an amount of ₹17.43 crore was expended for the scheme. 378 families received assistance for house construction and 210 families availed assistance for land purchase.
Health Scheme- Financial assistance to Seriously ill People	Illness assistance for treatment of serious diseases like cancer, heart/kidney/brain ailments to SC families below poverty line.	In 2016-17, ₹18.80 crore was given as treatment grant to 23073 persons. 29 homoeo health centres were set up during the year. ₹91.95 lakh was expended for starting mobile medical units in Palakkad, Idukki, Kollam and Kasargod districts.
Assistance for marriage of SC girls	Financial assistance to daughters of SC parents to reduce the burden of marriage expenses	In 2016-17, 10523 families benefited and ₹52.60 crore was expended under this scheme. In 2017-18, 13.75 crore was allotted and 2735 families benefited up to August 31, 2017.
Self-Employment scheme	Financial assistance for promoting new ventures by the Scheduled Caste	In 2016-17, ₹3.68 crore expenditure incurred benefitting 542 persons. In 2017-18, 58 persons benefited as on August 31, 2017 (Appendix 4.3.22).

Source: SC Development Department

and expenditure of welfare of Scheduled Caste for 2016-17 and 2017-18 (as on August 31, 2017) and the physical targets and achievements are given in **Appendix 4.3.17 and 4.3.18** respectively. Details of major schemes implemented by the SC Development Department is given in **Box 4.3.6**.

Other Initiatives/Achievements of the SC Department in 2016-17

- Financial Assistance for seeking employment abroad has been increased from ₹50,000 to ₹100,000 and assistance was given to 446 beneficiaries.
- Marriage assistance enhanced from ₹50,000 to 75,000.
- ₹7.33 crore was allotted as inter caste marriage assistance for 1,466 couples.
- 3 students availed financial assistance for studying abroad and 476 students availed assistance for studying outside Kerala.
- ₹98.00 crore was allotted for the development of 196 SC colonies under Ambedkar self-sufficient village scheme.
- Training was given for 1,551 SC beneficiaries, job oriented training given to 5,401 persons and civil service coaching was given to 30 students.

Protection of Civil Rights and Enforcement of Prevention of Atrocities Act

The Acts of Parliament namely the Protection of Civil Rights (PCR) Act, 1955 and the Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act, 1989 prescribe punishment for the enforcement of any disability arising from the preaching and practice of 'Untouchability' and prevent atrocities against members of Scheduled Castes and Scheduled Tribes There is a Special Court for the trial of such offences and relief and rehabilitation of the victims of atrocities.

According to the National Crime Records Bureau, in 2016-17, 267 cases were registered and an

amount of ₹251.69 lakh has been disbursed as compensation to the victims. 96 cases were registered in 2017-18 and ₹83.65 lakh was given as compensation grant as on August 31, 2017. Details are given in **Appendix 4.3.23**.

Critical Gap Filling (Corpus Fund)

This scheme provides fund for filling critical gap in the SCSP provision made under various schemes on project basis with emphasis on human resource development, basic needs, economic development etc. From 2014-15 onwards, one third of the outlay has been allocated to districts on basis of proportion of SC population in the district. Schemes/projects up to ₹25 lakh are cleared by the District Level Committee for SC/ST. Project above ₹25 lakh are cleared by State Level Working Groups/Special working Groups. Schemes undertaken in 2016-17 under this scheme are treatment grant, distress relief fund, self-sufficient village scheme, starting mobile medical units, renovation works, water supply scheme, purchase of machinery and equipment etc. Outlay and expenditure under the scheme from 2012-13 to 2017-18 is given in **Appendix 4.3.24**.

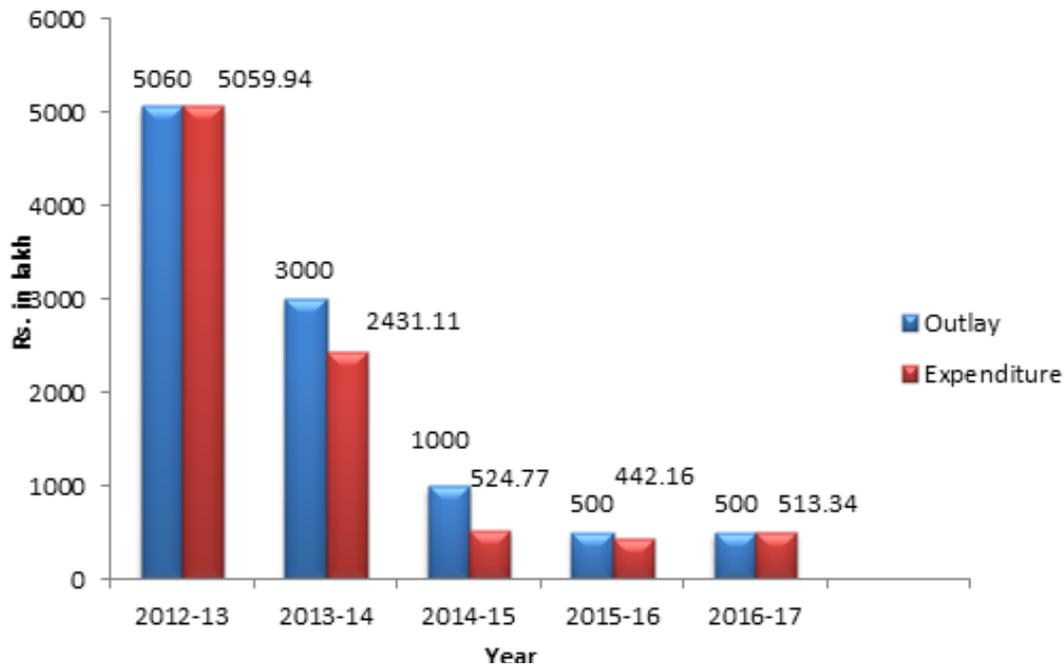
Pooled Fund

Pooled fund is a system of earmarking certain amount of SCSP/TSP as pooled fund under SCSP and TSP. Various development departments and agencies are furnishing projects to State Planning Board for consideration. After vetting by State Planning Board, the proposals are forwarded to Scheduled Caste Development Department for placing before State Level/Special Working Group for approval. Outlay and expenditure under the scheme from 2012-13 to 2017-18 are given in **Appendix 4.3.25 and Figure 4.3.8**.

Special Central Assistance to Scheduled Caste Sub Plan (SCA to SCSP)

The Special Central Assistance to Scheduled Caste Sub Plan is provided by Government of India to States for undertaking mainly economic

Figure 4.3.8
Outlay and Expenditure under Pooled Fund from 2012-13 to 2016-17, ₹in lakh



Source: Scheduled Caste Development Department

development programmes for Scheduled Castes. It is not on a schematic pattern. It helps to fill the gaps which is not met from the Central, State and Local Body Plans. Out of the total funds received under SCA to SCSP, 75 per cent of the fund is distributed to District Collectors on the basis of Scheduled Caste population in the districts. The balance 25 per cent is kept with the Director, Scheduled Caste Development. Activities that can be taken up under SCA to SCSP are assistance to Scheduled Caste families for taking up viable income generating activities, through a mix of institutional finance and subsidy. The outlay and expenditure details of SCA to SCSP from 2012-13 to 2017-18 are given in **Appendix 4.3.26**.

Programmes of Scheduled Tribes Development Department

The concept of Tribal Sub Plan was introduced for the development of Scheduled Tribe population during the Fifth Five-Year Plan (1974-75). The objective of the Tribal Sub Plan

was to give a special care to Scheduled Tribes through a Sub Plan approach. Since 1983-84, the strategy has undergone changes and it has been decentralised at the district level. After the 73rd and 74th Constitutional Amendments, the local governments have been entrusted with specified responsibilities relating to development and welfare of Scheduled Tribes.

The Tribal Development Block of Attappady was the first Integrated Tribal Development Project (ITDP) in Kerala (1976). Later six more ITDPs were formed with specific jurisdiction for the betterment of tribal population. The development of Scheduled Tribes outside the ITDPs is now covered by ten Tribal Development Offices (TDOs).

Due to the typical settlement pattern, cultural practices and traditional identities, the Scheduled Tribe population are consolidated in clusters and are concentrated in interior forest and adjoining areas. Considering this, the strategy of TSP was to protect tribal people and thereby attain tribal

Table 4.3.19
TSP – Year-wise Pattern of Funding and Expenditure in the
XII Five-Year Plan, ₹ in crore

Year	Total Allocation	% Allocation of TSP to State Plan	LSGs			Department	
			Outlay BE	Fund Available	Expenditure (Based on OB)	Outlay	Expenditure
2012-13	325.05	2.32	123.62	162.17	102.00	201.43	205.33
2013-14	389.85	2.29	124.30	183.11	136.89	265.55	267.10
2014-15	600.00	3.00	139.22	185.44	121.61	460.78	390.46
2015-16	604.50	3.02	139.22	225.83	149.64	465.28	366.69
2016-17	682.80	2.84	156.00	216.87	107.53	526.80	480.77
Total	2602.25	2.74	682.36	973.42	617.67	1919.84	1710.37

development. As per the TSP strategy, the State Government allocates an amount which is more than proportional to the tribal population (1.45 per cent) in the State. The TSP provision in the Budget is for the exclusive development of Scheduled Tribes in the State. In 2016-17, about 2.84 per cent of the State Plan outlay was provided under TSP. For the year 2017-18, allocation to the TSP was 2.83 per cent of the State Plan.

The major source of funds for tribal developments are (i) State Plan allocation, (ii) Funds under TSP components of Centrally Sponsored Schemes (CSS) (iii) Special Central Assistance to Tribal Sub Plan (SCA to TSP), Grant under Article 275 (1) of the Constitution other allocation for schemes implemented by Ministry of Tribal Affairs and (iv) Institutional finance.

The expenditure of the Scheduled Tribes Development Department during 2016-17 was ₹475.41 crore (90.33 per cent) as against the allocation of ₹526.65 crore. The total State Plan provision set apart for the development of Scheduled Tribes during 2017-18 was ₹751.08 crore. Out of this, an amount of ₹575.08 crore (76.57 per cent) was earmarked to the ST Development

Department and an amount of ₹176 crore (23.43 per cent) was provided as grant-in-aid to local governments. For the 50 per cent and 100 per cent CSS, the anticipated Central share is ₹21.30 crore and ₹105.02 crore respectively. In addition to this, ₹13.00 crore is anticipated as Special Central Assistance to TSP. Details of financial achievements are given in **Appendix 4.3.27** and physical achievements of schemes implemented by the department during 2016-17 and 2017-18 (as on August 31, 2017) are given in **Appendix 4.3.28**.

Performance in the XII Five-Year Plan

In the XII Five-Year Plan ₹2,602.25 crore was earmarked as TSP flow from the State Plan provision of ₹95,010.00 crore. This accounts to 2.74 per cent of the State Plan which is much higher than the overall flow of 2.05 per cent during the XI Plan. The earmarked financial outlay and expenditure of State Plan Schemes of Scheduled Tribes Development Department and Local Governments from the period from 2012-13 to 2015-16 are given in **Table 4.3.19**.

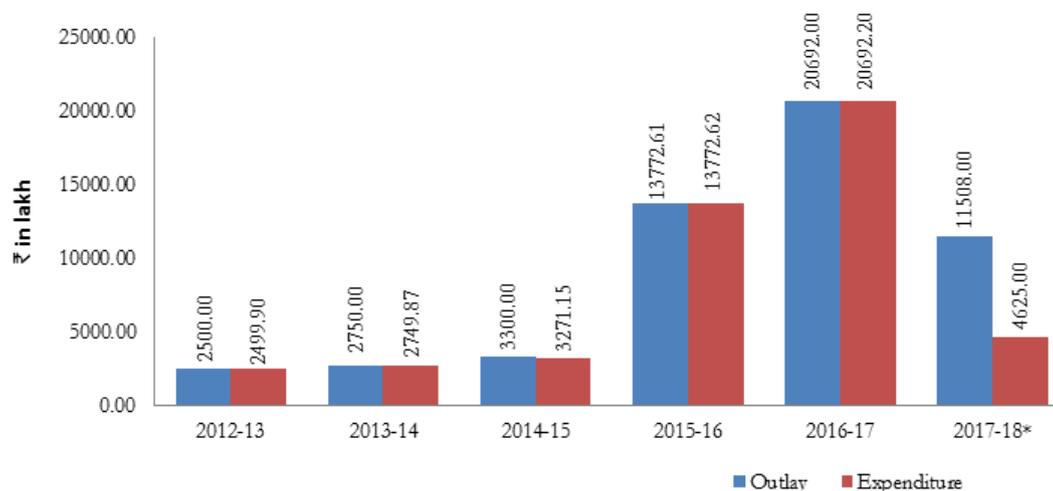
The major schemes implemented by Scheduled Tribes Development Department can be broadly classified as educational programmes, housing, health, socio economic upliftment and

Box 4.3.7
Major Schemes of ST Development Department

Name of Schemes	Objectives	Achievements
Educational Pro-grammes	Provide educational assistance to <ul style="list-style-type: none"> • Pre-matric studies • Post-matric studies • Running of Model Residential Schools • Students studying in self-financing colleges 	<p>During 2016-17, an amount of ₹3.69 crore has been expended benefitting 14918 students under Pre-matric assistance and an amount of ₹25.00 crore has been expended benefitting 12612 students under Post-matric assistance. During 2017-18 (up to August 31, 2017) an amount of ₹1.27 crore has been expended as educational assistance benefitting 1,784 students under Pre-matric assistance and an amount of ₹12.00 crore has been expended benefitting 15,986 students under Post-matric assistance.</p> <p>During 2016-17, Scheduled Tribes Development Department was provided an amount of ₹155.30 crore and the expenditure was ₹121.40 crore. For the year 2017-18 (up to August 31, 2017) an amount of ₹47.38 crore has been expended out of the total provision of ₹170.90 crore. (Appendix 4.3.29, 4.3.30, 4.3.31 and 4.3.32).</p>
Housing Scheme	Financial assistance for construction of new houses for house-less ST families	<p>During 2016-17, an amount of ₹50.47 crore was provided for spill over houses under the general housing scheme and ₹50.47 crore was expended. An amount of ₹156.45 crore was provided under ATSP housing by the Scheduled Tribes Development Department and ₹156.45 crore was expended.</p> <p>During 2017-18, under general housing an amount of ₹115.08 crore was provided and expenditure is ₹46.25 crore (as on August 31, 2017) (Figure 4.3.9, Appendix 4.3.33 and 4.3.34).</p>
Health Scheme	Illness assistance for treatment of diseases such as TB, Leprosy, Scabies, Sickle Cell Anaemia, Waterborne Diseases, etc.	<p>During 2016-17, an amount of ₹15.00 crore was provided for health care activities under the Plan and the expenditure incurred was ₹14.78 crore. In 2017-18, ₹20.00 crore was provided to health schemes and ₹13.47 crore has been expended as on August 31, 2017 (Appendix 4.3.35).</p>
Resettle-ment of Landless Tribes	To provide at least one acre of land per family to landless ST people subject to ceiling of 5 acres based on a master Plan.	<p>As on August 31, 2017, 739 families have been distributed 278.96 acres of land. District-wise details of land distribution are shown in Appendix 4.3.36.</p>

Source: Scheduled Tribes Development Department

Figure 4.3.9
Outlay and Expenditure on Housing Programmes Undertaken by
ST Development Department



* Up to August 31, 2017

Source: Scheduled Tribes Development Department, Plan Space

legal protection measures. The objectives and achievements of major schemes implemented in 2016-17 and 2017-18 (up to August 31, 2017) are given in **Box 4.3.7**.

Corpus Fund

An amount of ₹5,057.69 lakh was provided in 2016-17 for undertaking various development activities under the scheme and the amount expended during the period was ₹4,754.41 lakh (94 per cent). The components of the fund include self-employment, skill development, water supply and sanitation, communication facilities, foot bridges, technology transfer, improvement of education, health etc. Statement showing the outlay and expenditure under corpus fund from 2012.13 to 2017-18 (up to August 31, 2017) is given in **Appendix 4.3.37**, **Figure 4.3.10** and district-wise details during 2017-18 are given in **Appendix 4.3.38**.

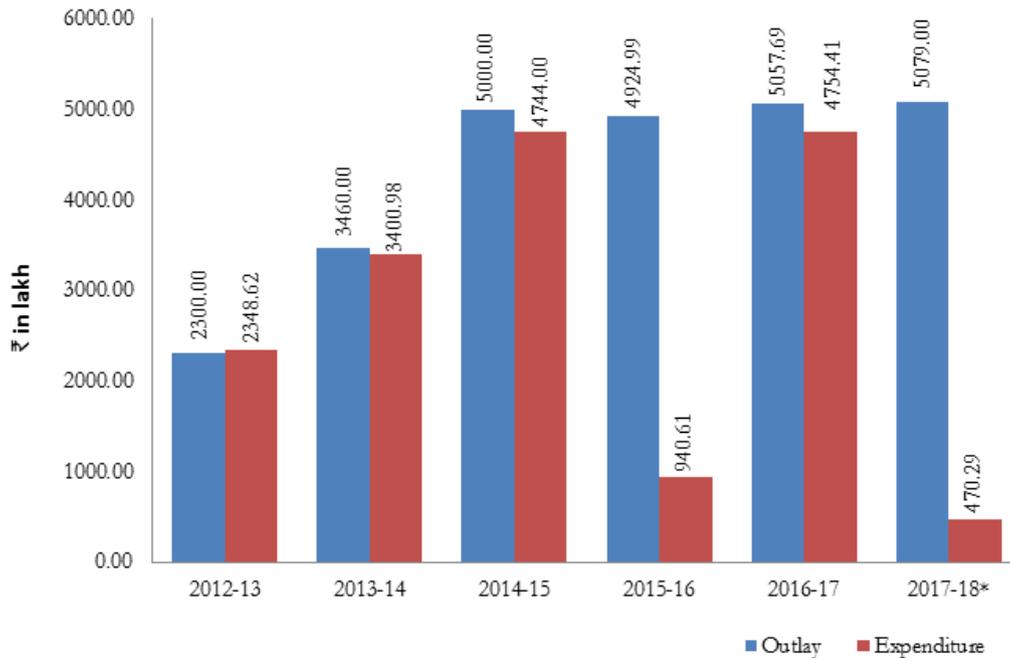
Additional Tribal Sub Plan Fund(ATSP Fund)/ Special Package

Additional Tribal Sub Plan Fund is a special package in addition to the normal share of TSP to be utilised for the socio-economic betterment of tribal population living in the tribal settlements in the State. In 2014-15, an amount of ₹150 crore was set apart as ATSP Fund/Special Package as a new initiative for the Integrated Sustainable Development of Scheduled Tribes in the identified settlements. This scheme was continued in 2015-16 and 2016-17 also. In 2016-17, emphasis was given on housing. The expenditure under this scheme is ₹156.44 crore as on August 31, 2017. The details are given in **Appendix 4.3.39**.

Ambedkar Settlement Development Scheme (Erstwhile ATSP Fund/ Special Package)

In the Annual Plan 2017-18, the scheme named “ATSP Fund/Special Package” was renamed as

Figure 4.3.10
Allocation and Expenditure under Corpus Fund, ₹ in lakh



* Up to August 31, 2017

Source: Scheduled Tribes Development Department, Plan Space

Ambedkar Settlement Development Scheme and an amount of ₹100 crore was earmarked. For implementing the scheme, 90 colonies have been selected by the Scheduled Tribes Development Department.

Special Central Assistance to Tribal Sub Plan (SCA to TSP)

The Special Central Assistance to Tribal Sub Plan released by Government of India as an addition to State Plan Funds is meant for undertaking programmes of education, health and employment cum income generation activities beneficial to Scheduled Tribes families. The outlay and expenditure under SCA to TSP from 2009-10 to 2017-18 (up to August 31, 2017) is shown in **Appendix 4.3.40**.

Kerala Institute for Research Training and Development Studies for SC/ST

The institute was established in 1970 as Tribal

Research and Training Centre (TR&TC), which subsequently got recognized as the Kerala Institute for Research Training and Development Studies of Scheduled Castes and Scheduled Tribes (KIRTADS). The institute conducts research and intensive study on Scheduled Caste and Scheduled Tribe population of the State.

Anthropological investigation on doubtful community cases as requested by Scheduled Tribes Development Department, Scheduled Caste Development Department, Revenue Divisional Officers, Tahsildars and District Collectors has also been undertaken by the wing. Details are given in **Appendix 4.3.41**.

The training wing of KIRTADS co-ordinates and conducts a large number of programmes to promote tribal development. This wing also conducts many orientation programmes, capacity building programmes, empowerment programmes and educational programmes. The institute also undertakes Adikalagramam programme which

Box 4.3.8 Institutions under Scheduled Tribes Development Department	
Educational Institutions	Health Institutions
<ul style="list-style-type: none"> • 19 Model Residential Schools • 23 Single Teacher Schools • 13 Nursery Schools • 9 Kindergarten • 7 Balavadies/Vikasvadies/Balavinjan Kendrams • 7 Peripatetic Education Centers for Particularly Vulnerable Tribal Groups • 106 Pre-matric Hostels • 3 Post-matric Hostels • 12 Training Centers • 2 Vocational Training Centers 	<ul style="list-style-type: none"> • 1 Ayurveda Hospital • 17 Ayurveda Dispensaries • 5 Out Patient Clinics • 12 Mobile Medical Units • 4 Mid Wifery Centers

Source: ST Development Department

include traditional dance and music of the SC and ST communities of the State. The scheme-wise outlay and expenditure of KIRTADS are given in **Appendix 4.3.42**.

Kerala State Development Corporation for SC and ST

The Kerala State Development Corporation for Scheduled Caste and Scheduled Tribes Limited was incorporated in the year 1972 as a Company under the Companies Act, 1956. The Corporation implements various income generating and other welfare programmes designed to suit the needs and aspirations of entrepreneurs from SC/ST communities. Schemes being implemented by the Corporation can be broadly grouped as (i) Sole Lending Scheme (ii) Schemes implemented in association with the National Scheduled Caste Finance and Development Corporation (NSFDC) and (iii) Schemes implemented by National Scheduled Tribes Finance and Development Corporation (NSTFDC).

In 2016-17, the Corporation assisted 5,031 beneficiaries disbursing an amount of ₹55.35 crore. In 2017-18, assistance was given to 1,809 beneficiaries. The scheme-wise details of physical

and financial achievements of the Corporation are given in **Appendix 4.3.43**.

Welfare of Other Backward Classes

The Directorate of the Backward Classes Department was created in 2011-12 to look after the development of socially and economically backward communities of the society. The department has implemented various educational schemes for OBC students as well as OEC students.

OBC educational scheme includes post matric scholarship and Pre metric scholarship. In 2016-17, a total of 108,042 OBC students benefitted from post-matric scholarship and 306,826 OBC students received pre-matric scholarship. Through OEC educational assistance, 188,376 OEC students benefitted from post-matric assistance and 202,230 students received pre-matric assistance. Other major schemes include employability enhancement programme, overseas scholarship scheme, career in automobile industry, construction of hostels and assistance to traditional occupations. From 2016-17 onwards the scheme for the traditional rural barbers for modernising their shops was started. In the first year, 2,219 individuals benefitted from this scheme.

In 2016-17, ₹8,804.26 lakh (62.78 per cent) expenditure was incurred out of the Budget provision ₹14,022 lakh. A total amount of ₹10,340 lakh was earmarked by the State Government for the Backward Classes development during 2017-18, of this ₹2,820 lakh is State share for CSS. An amount of ₹5,000 lakh is anticipated as 100 per cent CSS in 2017-18. The expenditure incurred as on August 31, 2017 is ₹3,723.95 lakh. The Scheme wise outlay and expenditure and the physical achievements of the department in 2016-17 and 2017-18 (up to August 31, 2017) are given in **Appendix 4.3.44 and 4.3.45.**

Kerala State Backward Classes Development Corporation (KSBCDC)

The Corporation aims at the socio-economic upliftment of the backward classes and minorities in the State. KSBCDC provides financial assistance at lower rate of interest to the members of backward and minority communities living below poverty line. KSBCDC also implements various welfare schemes and provides assistance such as marriage assistance scheme, Vidhyasree loan, Foreign employment loan, Suvarnasree loan etc. by utilizing State Government assistance and its own fund reserves. The corporation has disbursed loans worth ₹31,692.37 lakh during 2016-17 benefitting 37,766 individuals. Out of these, 28,257 were women (74.82 per cent). As on August 31, 2017, an amount of ₹12,473.85 lakh was disbursed to 10,368 individuals in the year 2017-18.

The source-wise expenditure and the physical achievements of the Corporation in 2016-17 and 2017-18 (up to August 31, 2017) are given in **Appendix 4.3.46.**

Kerala State Development Corporation for Christian Converts from Scheduled Caste and the Recommended Communities

The main objective of this Corporation is to

promote social, educational, cultural and economic upliftment and other living conditions of the converted Christians from Scheduled Castes and other recommended communities. The main schemes implemented by the Corporation are agricultural land purchase, foreign employment, housing, cash incentive to students, marriage loan, agriculture and allied sector assistance, small business, educational loan. The source of finance of the Corporation is the financial assistance received from State Government and the loan assistance from NBCFDC. Details of year wise disbursement of State Government assisted loan schemes from 2012-13 to 2017-18 (as on August 31, 2017) are given in **Appendix 4.3.47.**

The scheme-wise details of physical and financial achievements of the corporation are given in **Appendix 4.3.48.**

Welfare of Minorities

As a part of implementation of Justice Rajindar Sachar Committee Report, and consequent to Paloli Muhammed Kutty Committee report, Minority Welfare Department was constituted in the State during 2012 for addressing the socio economic and educational backwardness of Minority Communities in the State. The major schemes implemented by the Minorities Welfare Department are educational assistance, housing scheme for divorcees/widows/abandoned women from the minority communities, drinking water supply scheme in minority concentrated areas. An amount of ₹93,92.4 lakh (88.05 per cent) was expenditure from the budget provision of ₹10,667 lakh including central assistance in 2016-17. A total amount of ₹8,250 lakh was earmarked by the State Government for the sector in 2017-18, of this ₹550 lakh is State share for CSS. An amount of ₹1,650 lakh is anticipated as 75 per cent CSS during 2017-18 for Multi Sectoral Development Programme. The scheme-wise outlay and expenditure and the physical achievements of the department in 2016-17 and 2017-18 (up to August 31, 2017) are given in **Appendix 4.3.49 and 4.3.50.**

Kerala State Minority Development Finance Corporation

The State Government constituted the State Minority Development Finance Corporation in order to promote welfare and economic development of religious minority and recommended communities, as notified by the Central and State Government from time to time. The Corporation provides financial assistance by way of loans, advances, guarantees, securities and other financial aids subject to the guidelines as laid down by Government of India. The major schemes include financial assistance to income generating projects, housing finance, educational loans, vocational training etc. to minority communities. An amount of ₹1,500 lakh has been provided as share capital contribution to the Corporation during 2017-18. The financial and physical achievement of the corporation is given in **Appendix 4.3.51**.

Welfare of Forward Communities (Sammunathi)

The State Government constituted the State Welfare Corporation for Forward Communities for the comprehensive development of economically backward sections among the forward communities. The major schemes of the Corporation include scholarship, coaching assistance, term loan assistance, skills and entrepreneurship development and renovation of Agraharas. In 2016-17, an amount of ₹1,923.14 lakh was expended out of the Budget provision of ₹3,500 lakh. An amount of ₹3,000 lakh was earmarked to Welfare Corporation for Forward Communities in the year 2017-18 for various programmes. The Scheme wise outlay and expenditure and the physical achievements of the Corporation during 2016-17 and 2017-18 (up to August 31, 2017) are given in **Appendix 4.3.52**.

SOCIAL SECURITY AND WELFARE

Social security and welfare measures are necessary to ensure that the most vulnerable are protected and provided support to mainstream into society. Social Protection is defined by the ILO as a set of public measures that a society provides for its members to protect them against economic and social distress caused by the absence or a substantial reduction of income from work as a result of various contingencies and should be approached in its various dimensions and through various phases of the life cycle. It talks of Social Security for All, which envisages that “in a crisis-shaken world marked by a perhaps unprecedented quagmire of political, environmental, economic and fiscal uncertainties... social security is a human right and all people regardless of where they live, should be guaranteed at least a floor of basic social protection” (ILO, Social Security for All, 2012). There is a growing demand that the approach

to social protection should progressively shift to a rights-based framework. In countries where a vast majority of the population live below the poverty line and are unable to access services or benefit from a market economy, such protection is essential. Social security benefits are powerful tools to combat poverty and achieve the Sustainable Development Goals. While earlier development theories considered social policy as a residual, it is now being increasingly realised that it is essential to integrate economic and social policies; the build-up of national social security systems early in the economic development process is a key investment in overall development.

Despite a strong social safety net, a considerable number of people still find it difficult to cope with the painful problems of exclusion, destitution, chronic or life threatening diseases, disabilities

and sudden poverty. There are also outlier groups who are outside the social safety net. It is the responsibility of a civilized society to ensure that all marginalized groups have equal access to opportunities and capabilities and live a life of dignity. There is a need to strengthen the available services, improve their quality, and ensure a coordinated monitoring. Several of the projects on social security are related to this dimension. It is important to ensure comprehensive coverage, identify the need for new interventions if there are critical gaps in coverage, avoiding duplications and overlaps.

Kerala has several achievements in introducing social security measures to the vulnerable groups like persons with disabilities, aged people, women and children in difficult circumstances. In Kerala, the Department of Social Justice and its allied agencies are involved in addressing the problems of social security and welfare. The departments and agencies stand for a caring and equitable society and their major activities are given in **Appendix 4.3.53**.

Thirteenth Five-Year Plan

Vision of the Social Justice Department in the 13th Five-Year Plan is to move on to a caring and equitable society in which :

- Senior citizens, Persons with Disabilities and victims of abuse lead productive, safe and dignified lives
- Women live with dignity contributing as equal partners in development in an environment free from violence and discrimination and
- Children are well nurtured with full opportunities for growth and development in a safe and protective environment.

Categorisation of Social Security Programmes in Kerala

The social security programmes in Kerala can be categorised into two: A. Institutional Care and B. Social Assistance Programmes.

A. Institutional Care

In the State, Government as well as NGOs and Voluntary Organizations provide institutional care to the disadvantaged sections of the population. There are 75 welfare institutions under the aegis of Social Justice Department (SJD) for the care, protection and rehabilitation of children, disabled, women and aged. Out of this, 27 institutions are for children, 16 for women, 16 for senior citizens and 16 for disabled. Through institutional care and support, SJD provided rehabilitation services to more than 2,800 persons in different categories and more than 80,000 persons are benefitted every year through the institutional support of NGOs registered under Orphanage Control Board. In 2016-17, 2,142 persons and 1,308 persons up to August 30, 2017 were benefitted through the network of these institutions under SJD. Apart from this, 2,068 persons were benefitted through different registered welfare institutions as on August 30, 2017. In this period, the number of occupants is less compared to the sanctioned strength of inmates for certain categories of institutions run by SJD. It could be that the sanctioned strength no longer exists in practice due to financial difficulties in maintaining large numbers. As against the total sanctioned strength of 148,227 inmates in the registered welfare institutions under SJD, the occupants were 85,178 in 2016. This is about 57 per cent of the total sanctioned strength of inmates. In the welfare institutions registered under SJD, the number of inmates is higher than sanctioned strength in Nirbhaya shelter homes and Beggar homes but much less in homes for Psycho Social Rehabilitation and foundling homes.

The number of welfare institutions currently in government sector is 75. However, it is a major concern that the State does not have any care institutions/assisted living homes for children with intellectual disabilities (Autism, Cerebral Palsy, Multiple Disabilities and Mentally Retardation). All these necessitate an integrated policy framework and careful planning for establishing new institutions different from those in the past. The District-wise coverage of beneficiaries in

Box 4.3.9

Approach for the 13th Five-Year Plan

- Investment in social security – most particularly for the income-poor, victims of social discrimination, the economically vulnerable, the unemployed, senior citizens, the hungry, the sick, and persons with disabilities has been a characteristic and acclaimed part of Kerala's modern political history.
- Persons with Disabilities- In the XIII Five-Year Plan period, allocations will be made to ensure disabled access to public buildings in all districts of the State. Planning Board will reach out to organizations of PwD and to others working in this field to design programmes that enhance the all-round capabilities of PwD.
- In the XIII Five-Year Plan, prevention initiatives, early screening, early intervention through District Early Intervention Centres (DEICs), education support through special Anganwadies, model child-rehabilitation centres, special schools, integrated schooling, vocational training, work centres for persons with disabilities, community-based rehabilitation, and assisted-living projects may be given priority.
- Owing to differences between men and women in longevity and in age at marriage in Kerala, the number of widows are growing; current estimate is that 58 per cent of women above the age of 60 years is a widow. Special attention will be paid to their economic, health and welfare needs.
- Enhance the size and scope of the pension scheme for the senior citizens in the State. Special emphasis for the health problems of senior citizens, particularly in the sphere of non-communicable disease; Need to start Day Care Centres for the elderly.
- Gender and Development -The XIII Five-Year Plan is committed to gender budgeting.
- Need for a policy that enhances economic independence, independent participation in political and social life, and freedom in public spaces for women.
- Enhance allocations for women's wage employment, self-employment and livelihoods, skill development, special facilities at the workplace, childcare, the protection of women from violence, and victims of violence.
- Address the development problems of transgenders and all the forms of gender discrimination.

major welfare institutions run by SJD is given in **Appendix 4.3.54** and that of registered welfare institutions in **Appendix 4.3.55**.

B. Social Assistance Programmes

Social assistance programmes aims to reduce poverty and vulnerability among the people having little or no regular means of subsistence. Various social assistance programmes are listed below.

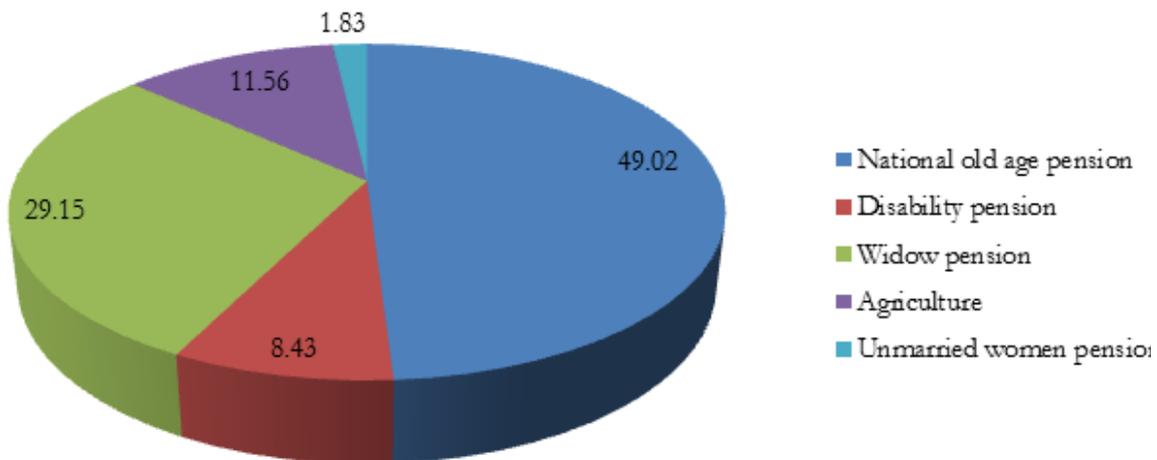
Social Security Pension Schemes through LSGIs

Old age pension, disability pension, widow pension, pension for unmarried women above 50 years and agriculture labour pension are the major pension schemes. Of these, the first three are part

of the National Social Assistance Programme (NSAP) for which central assistance is received. From April 2015, the disbursement of pensions is being done at the State level through the newly introduced Direct Benefit Transfer (DBT) system. As on March 31, 2017, there were 42.45 lakh pensioners in the State. The highest category of pensioners is of old age pensioners (49.02 per cent) followed by widow pensioners (29.15 per cent) (**Figure 4.3.11**).

Among the districts, Thiruvananthapuram is on top with highest number of beneficiaries and Wayanad the least. If the entire social security pension scheme system in the State is operated from one head, a comprehensive list of pensioners would be available which would help us to ascertain the actual beneficiaries and extend its coverage to the needy people who may have been left out.

Figure 4.3.11
Beneficiaries of Pension Schemes in Kerala through LSGIs in 2016-17



Source: Directorate of Panchayats

The district wise coverage is given in **Appendix 4.3.56**.

Social Security and Welfare to Unorganised Sector workers

Social security coverage to workers in the unorganized sectors is given through the Welfare Fund Boards. There are 32 Welfare Fund Boards in the State, of which 16 are under the direct control of the Labour Department. To bring all these boards under one umbrella is very helpful for monitoring and bringing uniformity.

Details on Welfare of Senior Citizens are given in the 'Ageing' section of this Chapter.

Welfare of Persons with Disabilities (PwDs)

Services to persons with disability also form a focus area. As being discussed globally, disability should no more be viewed merely from the welfare prism but recognized as a human rights and development issue. From being passive beneficiaries of doles, disabled have to be considered as citizens who can be equal partners and contributors to

development. The State accepts a rights based comprehensive life cycle approach to the services for Persons with disabilities which has been given due importance in the 13th Five-Year Plan. This includes prevention initiatives, early screening, early intervention through DEICs and other health and social sector institutions, education support through special anganawadis, Buds Schools, Model Child Rehabilitation Centres, special schools, inclusive education, vocational training, Sheltered Workshops, Community Based Rehabilitation and assisted living projects among others. While schools are admitting students with disabilities, appropriate mechanisms have to be put in place to make them inclusive. Teachers, in general need to be sensitized to the need of such students. Special education training needs to be more practice based like nursing training attached to hospitals. Current theory oriented system must change. Special attention should be given to cognitive disability. Diversity in cognitive disability should be emphasised. Individual Care Plan formulation and follow up shall be another major initiative. This requires convergence of services, resources and institutions.

In Kerala, a State wide Census of PwDs was undertaken by the Kerala Social Security Mission in 2015, the first of its kind in India, covering 22

types of disabilities. As per the survey, 7.94 lakh people equivalent to 2.32 per cent of the total population of the State are disabled, of whom, females constitute 44.57 per cent, SC 10.93 per cent and ST 2.15 per cent. The highest number of disabled persons is in Malappuram District (12.5 per cent) followed by Thiruvananthapuram (9.72 per cent) and the lowest in Wayanad District (2.91 per cent). Regarding type of disabilities, locomotor disability stands top with 32.89 per cent and multiple disabilities stand second 17.31 per cent.

State Policy for Persons with Disabilities

Government of Kerala enacted a policy for PwDs in the year 2015 recognising the necessity and inevitability of including disability dimensions in the development agenda, programmes and action plans of the State. Participation of PwDs in the developmental process, viewing disability as a human rights issue, protection from abuse and creating a positive environment and attitude for inclusive development and empowerment of PwDs are the key strategic focal dimensions of the policy. From being passive beneficiaries, the disabled have to be considered as equal partners and contributors to development.

Institutions for Empowering Persons with Disabilities

National Institute of Speech and Hearing (NISH)

NISH is a premier institute in the area of disability and has been declared as a National University for Disability Studies and Rehabilitation Sciences to provide an excellent environment for pursuit of higher studies for people with disabilities. The facilities of the NISH include audiological evaluation, speech languages rehabilitation, pre-school and parent guidance programme, ENT services, psychological services, speech therapy, degree courses for persons with hearing impairment, graduate and post graduate

programmes in human resource development and research activities etc. From April 2016 to March 2017, NISH has attended 226 cases (no. of students) under early intervention programmes, 4,553 cases seen/sessions given under hearing and speech language disorders programme and 2,165 cases under medical, psychology and allied services. The academic programmes conducted by NISH benefited 188 students. The training and industry placement benefited 24 persons and the volunteering and internship opportunity benefitted 43 persons.

Kerala State Handicapped Persons Welfare Corporation

Welfare Corporation

The Corporation provides economic empowerment and rehabilitation to persons with disabilities. In 2016-17, the Corporation supplied equipment like tricycle, wheel chair, hearing aid, etc. to 1,455 differently abled persons and issued motorized tricycle subsidy at ₹10,000 to 23 such persons, of whom the women beneficiaries were 2. Also, the Corporation distributed loans to 92 disabled persons (63 were male and 29 were female) for self-employment from the funding provided by National Handicapped Finance and Development Corporation. In addition, the Corporation itself distributed bank loan subsidy to 214 differently abled persons across the State for self-employment (150 were male and 64 were female) and provided rehabilitation to 18 male and 6 female disabled persons in old age home at Parassala. The Corporation also assisted 235 children through the fixed deposit scheme at the rate of ₹20,000 to each child (of whom 111 beneficiaries were girls and 124 boys) for severely disabled children. In 2017-18, corporation supplied equipment like tricycle, wheel chair, hearing aid etc. to 648 differently abled persons, assisted 35 children through the fixed deposit scheme at the rate of ₹20,000 to each child, distributed self-employment loans to 58 disabled persons from the funding provided by National Handicapped Finance and Development Corporation.

Box. 4.3.10**Major Recommendations of the 13th Five-Year Plan Working Group Report on Social Protection- Persons with Disabilities**

- Adopting a Right Based Comprehensive Life Cycle Approach on Disabilities.
- Establish autism centres at all Government Medical Colleges
- Strengthening Prevention of Disability and early screening, detection and intervention.
- Creation of human power resources for the Disability Sector as care givers.
- Group homes or adult family homes for the disabled girls/women
- 10-20 per cent of all housing stock should be earmarked for elderly and the disabled.

State Commissionerate for Persons with Disabilities

The State Commissionerate was set up as per the Persons with Disabilities Act (PwD Act) enacted by the Government of India in 1995. Co-ordinating the programmes implemented by different departments and monitoring the utilization of funds for the benefit of the disabled in the State are the functions of the Commissionerate. The other functions of the Commissionerate are conducting awareness camps, redressal of the complaints of disabled persons, inspection of institutions for disabled, etc.

National Institute of Physical Medicine and Rehabilitation

NIPMR is an institute under Department of Social Justice dedicated to the assessment and therapy of children and adults with multiple disabilities especially Cerebral Palsy and other associated disorders. An average of 20 clients mostly children are attending the speech therapy sessions under the Audiology and Speech Language Pathology department. The persons affected with stroke, accidents etc. are also to be treated with available facilities in NIPMR. Modernisation of prosthetic and orthopaedic department is being done and mobile intervention unit has started functioning.

Institute for Cognitive and Communicative Disorders and Neuro Sciences (ICCONS) and

Child Development Centre are the other major institutions working in this area. The particulars of these institutions are given in the chapter on Medical and Public Health.

Programmes for Persons with Disabilities

The schemes for the welfare of persons with disabilities are being implemented through Social Justice, Health and Education Departments. The schemes implemented through SJD and KSSM are listed below.

Issuing Disability Certificate to Differently Abled

As per 2015 Disability Survey, total number of disabled in Kerala is 7.9 lakh. According to the Persons with Disability Act, 1995 it is mandatory to provide disability certificate to all the disabled. From 2009 to March 2015, Kerala Social Security Mission distributed 283,277 identity cards through 1495 disability certification camps across the State. In 2017-18, Mission distributed 7,750 identity cards through 31 disability certification camps. The impact of such camps is that it reduces the difficulties faced by PwDs to travel to distant places for getting medical certificates.

Aswasakiranam Scheme

The scheme is implemented to provide monthly assistance to care givers of the following categories

of patients like 100 per cent blind, bedridden patients suffering from cancer, cerebral palsy, autism, mental illness, mental retardation and bedridden due to old age, who need a full-time caregiver. The number of beneficiaries during the financial year 2016-17 was 90,251.

Hunger Free City Scheme

The scheme is to provide free food at least once in a day to those who reach cities and are in need of food. Kozhikode is the first city to introduce this scheme. The number of beneficiaries under this scheme during the financial year 2016-17, was 9,70,157.

State Initiatives on Disabilities (SID)

This is a special initiative of the Government for prevention, detection, early intervention, education, employment and rehabilitation of the persons with disabilities through Social Justice Department with the joint support of Education and Health Departments. The major achievements are:

MMR Vaccination: MMR vaccination was started and given free of cost to new-borns from January 2014 onwards in Govt. Maternity Hospitals and about 4 lakh doses of vaccines were supplied as against the target of 6 lakh.

Universal Hearing Screening: To conduct hearing screening of new born babies, Oto Acoustic Emission Screeners were given to 5 Government Medical Colleges and Government Hospitals. Since its commencement in the year 2014-15, the number of neonates screened was 275,337 of which 31,450 babies were referred for further check-up and correction.

District Early Intervention Centres: Land for DEICs has been identified in all the 14 Districts. The expected outcome of DEIC is an “Accessible Service Hub” for PwDs and a Centre for education and training for their parents and other stakeholders. Mobile intervention units have been

launched at 25 blocks along with NHM and work has been initiated for establishing Model Child Rehabilitation Centre at Mattannur and Madai.

Establishing of Special Anganawadies for Pre-school Children with Disabilities:- The project initiated by Department of Social Justice for children with disabilities is being piloted in Kozhikode district. This programme has a great impact on the children in performing their Activities of Daily Living (ADL) by enabling them own their own to become more accommodative in their further schooling and reducing the constraints in mainstreaming.

State Initiative on Dementia

The Department of Social Justice has started a Day Care Centre at Thrissur Municipality and a full time centre at Edavanakkad Old age home for the rehabilitation of dementia patients in the State.

Insight Project

The Insight programme was started in 2007 to explore ways in which information and communication technology (ICT) can be leveraged to address challenges faced by people with disabilities. The initial phase of the programme focused on visual impairment. In 2009, it was extended to include an experimental programme for children with cognitive challenges. The programme was funded by Kerala State IT Mission and conceived and executed by SPACE, a non-profit organization. In 2013, the programme was handed over to Department of Social Welfare with the objective of scaling it up. The execution of Insight programme for the visually challenged was transferred to Kerala Federation of the Blind and SPACE continued the execution of Insight programme for cognitively challenged children.

Insight for Children with Cognitive Challenges provides support (including basic skill and academics-related training) for more than 60 children. It harnesses a blend of new technologies and traditional systems to train the children.

New technological tools and practices are being developed and experimented at SPACE. The training centre makes use of software tools to implement Individualized Education Plans to systematically monitor progress in each child. Innovative educational content and tools to build content are being developed. Training programmes on ICT for special education, content development and parent training are also undertaken. The knowledge flow from the programme benefits many other organizations indirectly. By supporting and strengthening the activities for the knowledge transfer, the benefits of the programme can reach more people.

Welfare of Women

Women constitute 52 per cent of State Population and the overall sex ratio of Kerala is 1,084 females per 1,000 males. Female literacy rate is 92 per cent which is highest in India. Maternal mortality rate was much lower in Kerala when compared to the situation in India. The present status of women in Kerala is given in the chapter on gender development. However, the activities of the institutions for women empowerment and major schemes promoting social and economic rehabilitation of women are as follows.

Indira Gandhi Matritva Sahyog Yojana

This centrally sponsored scheme provides financial assistance to pregnant women of 19 years and above for the first two live births. This scheme is implemented in Palakkad district.

Snehasparsham

This scheme implemented by KSSM aims to address the problem of unwed mothers. A monthly assistance of ₹1,000 is given to all unwed mothers and this scheme has benefitted 2044 women during the financial year 2017-18.

Women Development Programmes

This is a major programme of Social Justice Department focusing on implementation of dowry

prohibition, protection of women from domestic violence and sexual abuse, rehabilitation of victims including health care and compensation, economic support to women headed families and women belonging to BPL families and assistance to low salaried women for self-improvement through capacity building.

Nirbhaya Programme

Nirbhaya programme of Social Justice Department envisages setting up of “Nirbhaya Homes” for sexually abused women. There are 12 shelter homes (three in Thiruvananthapuram, one each in Kollam, Ernakulam, Thirur, Idukki, Wayanad, Palakkad, Malappuram, Kozhikode and Kasargod) for protection of victims of sexual abuse. 21 One Stop Crisis Cells are functional in Government Hospitals of all 14 districts of the State providing all required services to women victims of sexual violence, emergency health care, psychological counselling, police assistance, legal aid and safe shelter service. In 2016-17 up to August 30, 2017, the number of women benefited under the scheme were 331. Three Fast-Track Courts exclusively for women and children have been established in Thiruvananthapuram, Ernakulam and Kozhikode districts.

One Stop Centre

One Stop Centre will provide support and assistance to women affected by violence, both in private and public spaces. The centre at Thiruvananthapuram is operational. In 2016-17, Government of India has sanctioned four new One Stop Centres in the State in Thrissur, Malappuram, Kannur and Wayanad districts.

Transgenders

Kerala is the first State to establish a Policy for transgenders in India. Many of them are reluctant to reveal their identity. Transgenders are very much struggling for their day-to-day life activities. This group needs more attention for mainstreaming into the society. As per the disability census conducted in Kerala in 2015-16 there are 1,187 transgenders

in Kerala with disability. Thus various schemes are proposed to be implemented in 2016-17 for the welfare of transgenders. Department was able to provide scholarship assistance to three students and also conducted district level workshops for assessing the livelihood training required and other matters relating to mainstreaming of transgenders. In 2017-18 a scheme for transgender has been introduced. The major components are given in **Box 4.3.11**.

Beti Bachao Beti Padhao

This centrally sponsored scheme implemented by the Department of Social Justice was launched in Thrissur district on a pilot basis addressing the issues of women in the longer term and to reverse the trend of declining child sex ratio. As per the scheme, the State receives financial assistance from GOI to empower the girl child and enabling her education.

Institutions for Women Empowerment Kerala Women's Commission

The Commission was established in 1996 to improve the status of women in Kerala and enquire into unfair practices against women and recommend remedial measures. The Commission

implements gender awareness programmes and undertakes legal workshops/seminars, adalaths, DNA test, etc. In 2016-17, the Commission had conducted 262 legal workshops/seminars on various problems faced by women; conducted 46 counselling/skill training programmes for Panchayat Jagrathasamathis on various laws related to women and other legal procedures and disposed off 3350 petitions through 120 Adalaths. Under gender awareness programme, the Commission undertook 27 pre-marital counselling sessions across the State with the participation of women NGOs and conducted gender sensitisation programmes in 309 educational institutions. In 2016 to 2017, the Commission received 6,402 complaints; the nature of complaints shows that harassment of women, domestic violence and family problems dominate and are on the increase. The category wise and district wise details of complaints received as on March, 2017 are given in **Appendix 4.3.57**.

Kerala State Women's Development Corporation

Self-employment schemes for women, flagship programme on gender awareness and Finishing Schools are the major programmes of the Corporation. The Corporation distributed over

Box 4.3.11 Scheme for Transgender

- Transgender Helpline (24x7) and crisis management centre with the help of accredited NGOs working in the field of transgenders.
- Financial assistance for vocational training and self-employment.
- Pension for destitute transgender above the age of 60 years
- Organizing welfare programmes with accredited NGO and CBOs working for the welfare of transgender population
- Provide financial assistance for proper education as incidence of school drop-out is high, Sex Re-assignment Surgery (SRS) in Govt. Hospital based on medical advice, opening HIV zero surveillance centre for Transgender.
- Sensitize the public especially parents and family members, teaching and non-teaching staff and student community of educational institutions, officers of Health Department, LSGD, Employment Department and Labour Department.
- Scholarship for transgender students.

₹35.74 crore from National Corporations to 1772 women under self-employment loan scheme and ₹3crore to 173 women in general category through Plan fund. The Corporation has so far installed 49 She-toilet units across the State and 8 in major railway stations. As part of ensuring menstrual health and hygiene for adolescent girls and women, the Corporation launched the supply of high quality sanitary pads at affordable cost and installed vending machines and incinerators in 623 schools across the State. Under the flagship programme on finishing schools, the Resource Enhancement Academy for Career Heights (REACH) at Thiruvananthapuram and Kannur imparted skill training to 712 students and the EDP/Vocational training programme benefited 800 women across 7 districts. As part of gender awareness programme, KSWDC has started women cells in 40 women colleges. The main objective of the women cell is to make the youth aware of the issues involved in their society and to equip them with adequate management skills to handle day to day affairs. The corporation has proposed to start women cells in mixed colleges too, to promote the idea of gender equality and create gender friendly campuses in the State. The help line service as envisaged by the Ministry of Women and Child Development, GOI is an emergency response system for women in distress. Mithra Helpline (181) was launched in Kerala on 27th March 2017 and is presently functioning successfully as a 24/7 accessible and emergency response service for women in need. Help line has provided effective intervention in over 6,300 cases so far.

Gender Park

Gender Park at Kozhikode was conceptualised by the Department of Social Justice in 2013 (though its genesis goes back to 2011) as a platform for learning and research on gender equality and empowerment of women. It provides a space for all gender identities to overcome the socio-economic and political boundaries imposed on them by society and contributes to the economic, cultural, and social aspects of the State and the country. Among its main activities envisaged are: research - action research for policy making; skill

development centre - where any hard skills, on any heavy machinery will be taught; production Centre which can be an outlet of the SDC or can be independent in nature; Library and documentation centre; Heritage Museum which needs lot of research and a historical legacy of women should be maintained there; a cultural space for women to express their creativity in drawing, painting, dance and music and other areas of culture, including martial art. It already has an amphitheater and a legal centre.

An activity of Gender Park was the She Taxi flagship project, India's first 24x7 women-specific taxi network managed and run by women to promote entrepreneurship, self-employment and security of women.

Welfare of Ex-Servicemen and War Widows

The Department of Sainik Welfare is looking after the welfare and rehabilitation of ex-servicemen and their dependents. The department intends to train the ex-servicemen and widows for competitive examinations for re-employment and self-employment. Rehabilitation training on vocational/professional/technical courses for equipping the ex-service men/war widows and their dependents is a major programme. In 2017-18, up to September, the computer training centres at Thiruvananthapuram, Kozhikode and Thrissur provided rehabilitation training to 184 beneficiaries, of whom, 57 were women. Fashion designing training was provided to 9 dependent females.

Welfare of Prisoners

In Kerala, the jail infrastructure consists of 44 jails (designed to hold inmates awaiting trial or serving a short sentence) and 11 prisons (designed to hold inmates for a longer term convicted of more serious crimes). As on March 2017, there were 7,542 prisoners, of whom 190 are women.

The women prisoners in Kerala are marginal (2.5 per cent) compared to other southern States where this proportion ranged from 4 to 6 per cent. Modernisation of Prison and Welfare of Prisoners are the two major schemes implemented by the Prison department. Installation of CCTV in jails, construction of modern interview hall and public address system in central prisons, State level seminar on correctional administration etc. are the major programmes undertaken. During 2016-17, department established various farms in open prison Cheemeni, established computer lab in central prison, Kannur and expanded Free Fashionist a unit in central prison, Thiruvananthapuram. A prayer hall was also constructed in central prison Thiruvananthapuram and Thrissur. Details of prisoners in jails are given in **Appendix 4.3.58**.

Welfare of Children

As per 2011 census, the children in the age group 0-18 constitute less than 30 per cent of the State's total population and girl children in the age group 0-6 to State's population is 9.36 per cent. The under-five mortality in the State is 12 deaths per 1,000 live births. Kerala has achieved marked improvement in promoting survival, protection, development and participation rights of children in a holistic manner.

Children's Right to Protection

Child protection means to create a safe and caring environment for all children, free from neglect, violence, abuse and exploitation. Kerala performs much better in protecting children from all kinds of ill-treatment and violence. However, following constraints remain which prevent the State from providing social safety net for children, in particular those specifically vulnerable.

Crimes Against Children

Crimes against children continue to show an upward trend, with rising figures for kidnapping and rape. As per the report published by the State Crime Records Bureau, the crimes against children in the State are recorded as 2,881 cases in 2016 and 2037 cases up to July 2017.

Girl Child

The sudden decline in the Child Sex Ratio (0-6 years) at the all India level from 927 females per 1,000 males in 2001 to 919 in 2011 is a major indicator of women disempowerment. As per 2011 Census, the child sex ratio for the State is 964 which is only four points higher than in 2001 Census (960). While the child sex ratio in all the districts of Kerala is less than 1,000, the districts of Alappuzha (951), Ernakulam (961), Kasaragod (961) and Thrissur (950) show ratios below the State average which is quite alarming. Discouraging the use of sex selection techniques, rewarding the girl child and awareness creation are the interventions needed to promote the girl child.

Child Marriage

Child marriage is a violation of child rights. According to UNICEF, child marriage has been found to be on the rise in Kerala in recent years due to "migration from the northern part of the country". The UNICEF report observes that in recent years Kerala has been a favoured destination for young men from Haryana, who are looking for brides (given the skewed gender ratio in northern States). This is an issue that needs to be investigated further.

Child Abuse

Child abuse cases especially sexual abuse incidence of girl children are on the increase. As per State Crime Record Bureau, 754 sexual abuse cases were reported in Kerala up to July, 2017. The growing tendency, especially in adolescent years, towards substance abuse, use of alcohol and cyber abuse is another key area of concern.

Children's Right to Development

Early childhood is the most significant developmental period of life. Holistic development of children up to 18 years includes all areas of growth-physical, mental, emotional and social development. Kerala has always been in the forefront for promoting the above four domains

Box 4.3.12

Major Recommendations of the Working Group Report on Child Development

- State wide scaling-up of fortified ready to eat Take Home Rations for under three children
- Promoting healthy eating and living
- Pre-adolescent growth and nutritional screening
- Micro nutritional screening and food supplementation for pregnant women
- Implementation of guidelines for the feeding of infants and young children
- Regulate/streamline pre-primary education/curriculum
- Improve the infrastructure facilities of Anganwadi and training for Anganwadi workers; ensure access to nutritious food to all children in age group 0-6 years.
- Digitalization of details of all beneficiaries under the Anganwadi centres for timely intervention and follow up
- Setting up of a fully equipped food testing lab exclusively for ICDS
- Grading and accreditation of pre-school centres
- De-institutionalizing children at children's homes by reintegrating children in to the mainstream of society
- Organize programmes at Panchayath level to identify drop-outs and take measures to readmit them in schools with the support of SSA.

of child development. However, some lacunae in early childhood care remain. Even though the State shows a high level of immunization coverage (DLHS-4 report-full immunization coverage for 12-23 months is 82.5 per cent), anti-vaccine campaigns are noted in some of the northern districts of Kerala. Exclusive breast-feeding (first six months of infancy) rates in Kerala shows slow progress (prevalence of exclusive breast-feeding among 0-5 months is 69.1 per cent and 69.8 per cent in DLHS-3 and DLHS-4 respectively). Unhealthy feeding practices such as pre lacteal feeding practice, late initiation of breast milk and bottle feeding practices are noted in several research studies in Kerala.

Absence of universal pre-school education in the State is another major issue which requires much attention. As per RSOC-14, 26.2 per cent of children in the age group 3-6 years are not attending pre-schools. Also, absence of scientifically prepared uniform curriculum is another area of concern needing redressal.

Children's Right to Survival

Infant mortality and prevalence of low birth weight babies are the two major determinants of child survival. The State's Sustainable Development Goals target for IMR is to reduce it from 12 per 1,000 live births to 8 per 1,000 live births, MMR from 66 to 30 per 1 lakh live births and U5MR from 14 to 9 per 1,000 live births by 2020. Although the State has done well in above parameters, the prevalence of malnutrition (DLHS-4, around 21 per cent children below 5 years are underweight and 19.4 per cent are stunted), anaemia (DLHS-4, 34.6 per cent have anaemia and 2.4 per cent have severe anaemia), shortfall in full immunization (around 17 per cent of children in the State do not get all 5 vaccines before their first birthday) are high in certain districts of the State, particularly in the tribal population. All of these present a huge challenge for the Government to achieve the target of SDG.

Children's Right to Participation

Right to participation provides children with an environment to participate in decision making processes and gives them an opportunity to express their views freely. Kerala's model of Bala Sabha and Bala Panchayath as neighborhood network of children in LSGs for holistic development of child health has been widely acknowledged.

Major Programmes on Child Protection, Care and Development

The programmes and schemes related to protection, care and development of children are being implemented by the Department of Social Justice and KSSM. The major Acts, policies and programmes in addressing the rights of children are detailed below.

Protection of Children from Sexual Offences (POCSO) Act, 2012

The Act deals with child abuse and provides protection to children from the offences of sexual assault, sexual harassment and pornography. Steps have been taken in the State for the effective implementation of the Act. Eleven Special Care Homes have been set up to provide care and protection to children covered by this Act in 9 districts. Special Juvenile Police Units are being set up in all districts. To expedite the trial of cases registered under the Act, Special Courts have already been notified in the State.

Kerala State Commission for Protection of Child Rights

The Commission functioning as a statutory body has the mandate to examine and review the existing laws for the protection of child rights, enquire into cases of violation of child rights, look into factors inhibiting the enjoyment of those rights and suggest remedial measures etc. In 2016-17, the Commission received 2,512 complaints and 1,138 cases were disposed. Of these, 118 cases are related to POCSO, 128 cases are related to RTE and the remaining to child rights violation.

Adoption Services

There are 18 specialized adoption agencies, 5 recognized adoption placement agencies for inter-country adoption and 20 licensed adoption placement agencies functioning in Kerala. During 2013-14 to 2016-17, 613 in-country and 53 inter-country adoptions took place. In 2016-17, 136 children were adopted in Kerala, out of which 67 were females (55 in-country adoptions and 12 inter-country adoptions). Details of adopted children are given in **Appendix 4.3.59**.

Child line Services

Child line system is a 24-hour toll free telephone service (1098) for children in distress. The service is now available in 278 cities in India and 15 in Kerala (3 in Rural and 12 in Urban). Child line service would be strengthened further in consultation with NGOs and other voluntary organizations.

Integrated Child Development Services (ICDS)

ICDS, one of the flagship programmes of GOI, aims at early childhood development by providing an integrated package of services such as supplementary nutrition, immunization, health check-up, referral service, health and nutrition education and pre-school education to children less than 6 years along with pregnant and lactating mothers. In 2016-17, the number of Anganwadi Centers (AWCs) operational across the State were 3,3114, covering 11.16 lakh beneficiaries under supplementary nutrition programme and 4.32 lakh children in the age group 3-6 years under pre-school education. Of the beneficiaries of supplementary nutrition programme, 2.57 lakh were pregnant and lactating women. Under pre-school education, 2.15 lakh were girls in the age group 3 to 6 years. District wise coverage is given in **Appendix 4.3.60**.

With State Government support, the LSGIs have initiated various innovative practices under ICDS. To improve nutritional status of children in the tribal areas, Kudumbashree has established production units in Wayanad for micronutrient fortification of Amrutham Nutrimix. To combat

severe malnourishment, a community based nutrition rehabilitation programme has been introduced in the Attappady tribal project area with UNICEF support. GIS-based Jatak and Janani for real-time monitoring of nutritional status has been introduced in Attapadi. Jatak is a system for growth monitoring of under 5 year children on real-time basis, through mobile telephony comprising voice file, picture and location. This is functioning in Attappady and Manathavady. Social Audit of ICDS was conducted in Thirunelli Grama Panchayat in Wayanad district and Nemom project in Thiruvananthapuram district with the technical support of TISS, Mumbai. A Social Audit Manual and Tool Kit have been developed in Malayalam. Government will take steps to conduct Social Audit in all 33,115 AWCs in the State. Anganwadi Welfare Fund Board is constituted in Kerala for the welfare of Anganwadi workers and Helpers. The Early Childhood Care and Education (ECCE) Scheme provides early childhood care and education for children of pre-school age through Anganwadis.

Integrated Child Protection Scheme

This centrally sponsored scheme provides preventive, statutory care and rehabilitation services to children who are in need of care and protection and children in conflict with law. Child Protection Units, Child Welfare Committees, Special Juvenile Police Units, State Child Protection Society and District Child Protection Units and JJ Boards have already been established in the State to speed up implementation of the provisions contained in the JJ Act. The programmes related to various social legislations like Child Marriage Restraint Act, Kerala Beggary Prevention Act, programmes on Child Rights Convention, and adoption related laws are also being implemented under the scheme. Special courts have started in the State to expedite the trial cases registered under POCSO Act. In implementation of the Shafeeq Committee report, the Government of Kerala has issued a 'model' protocol on Balasuraksha detailing (1) implementing measures to prevent violence against children (2) identifying cases and

intervening early (3) providing care and protection to the victim and (4) preventing reoccurrence of abuse. In the 12th Five-Year Plan, Social Justice Department has taken several steps to prevent child abuse under ICPS. Measures have been taken for identification of vulnerable families, capacity development of front line agents, prevention of child sexual abuse, programmes like capacity development of teachers, training programmes for teachers in prevention and reporting of child sexual abuse.

Scheme for Adolescent Girls (Erstwhile Rajiv Gandhi Scheme for Adolescent Girls)

A centrally sponsored scheme, launched in Kollam, Idukki, Malappuram and Palakkad Districts, it aims at empowering the nutritional and health status of the adolescent girls in the age group of 11-18 years through 84 ICDS projects in the districts. In the 12th Five-Year Plan, the scheme assisted 46.95 lakh beneficiaries.

Kisori Sakthi Yojana

This is a centrally sponsored scheme with the objective to improve the nutritional status of adolescent girls in the age group of 11 to 18 years by using the platform of ICDS. The activities proposed are vocational training to adolescent girls, health and nutrition day celebration including health clinic activities, monitoring and evaluation at different levels, orientation, etc.

Cancer Suraksha and Thalolam Schemes for Child Patients

These schemes of KSSM give free treatment through government approved hospitals to children below 18 years who are suffering from cancer and life threatening diseases. The Cancer Suraksha Scheme is being implemented through 12 Government hospitals and Thalolam Scheme is being implemented through 18 Government hospitals in the State. In 2017-18, the Cancer

Suraksha scheme benefited 5,791 children and the Thalolam scheme benefited 13,801 children.

Snehapoorvam

Kerala Social Security Mission provides financial support to children who lost both parents or either of them and the other parent is not in a position to look after the child due to financial constraints. The scheme aims to give educational assistance to children up to degree level. HIV/AIDS affected students are also included under this scheme. This programme benefited 58,106 children till March, 2017.

Snehasanthwanam

The scheme, acts as a relief measure to endosulfan victims in the State. The financial assistance under this scheme is being provided from December 2010 onwards. It also provides educational assistance to children studying in class I to VII, and children who are studying in Buds school. The number of beneficiaries under the scheme in 2016-17 is 10,320.

Our Responsibility to Children Kerala (ORC)

The scheme offers psycho-social and emotional support to children with the support of other stakeholders like Police, Education/Health departments, LSGD, etc to prevent inculcation of harmful habits like substance abuse etc. During 12th Plan period, the project was implemented in 93 selected schools in Thiruvananthapuram, Kozhikode, Ernakulam and Thrissur districts.

Psycho Social Services for Adolescent Girls

This scheme of Social Justice Department provides counselling and guidance support to adolescent girls. The Psycho Social Counselling Centres were started in 807 selected schools with the support of concerned LSGIs and Education Department. Full time school counselors were posted in each school for giving counselling and guidance support to children.

Cochlear Implantation in Children

The project of KSSM provides cochlear implant to children in the age group of 0-5 years selected by regional and State level technical committees and provides financial support for Auditory Verbal Habilitation (AVH) to operated children through empaneled hospitals. The project assisted 109 children till March, 2017.

First 1,000 Days Programme for Infants in Attappadi

This is a special programme by Social Justice Department for infants in Attappadi focusing on early initiation of breast-feeding, timely introduction of complementary foods at six months, hygienic complementary feeding practices and full immunization and Vitamin A supplementation with de-worming, etc.

GIS Based Mother and Child Health Tracking System in Mananthawadi Block

This is a pilot programme run by Social Justice Department for tracking the health status of pregnant women and children in Mananthawadi block of Wayanad district with the support of the JATAK and JANANI software applications.

Generation Anganwadies/Model AWC's

This is a concept of bringing 3 generations under one umbrella; Aged persons for sharing their experience with the children below six years, adolescent girls and mothers into a common centre. The centre shall have facilities for all the functions of the regular Anganwadi along with a separate reading room for the elderly. 119 model Anganwadies were sanctioned and more than 506 regular Anganwadies were also sanctioned under NABARD, RIDF scheme for construction of the building.

Outlook

Vulnerability arises from risks and insecurity caused by various factors. Social protection system helps to absorb the shocks and minimise adverse impacts. It covers both deprivation and contingencies and prevents, reduces or eliminates economic and social vulnerabilities to deprivation. The framework of a Rights Based Social Protection Floor for the State will consist of the following key elements, namely, (i) protective measures for the formal sector(ii) promote measures like (a) improved earnings in the informal sector, (b) social assistance pensions, (c) public employment like MGNREGS, (d) food security: PDS, ICDS and Mid-Day Meal Programme and (iii) protection of the excluded social groups like people with disabilities, older people, victims of abuse, transgender, migrant labourers etc. The Social Protection Floor should lay down clear-

cut entitlements backed by legislation. In Kerala, the local governments can formulate their own social protection floor consisting of the following six dimensions of social protection (a) primary education, nutritional status and health of children (b) employment and livelihood security with the MGNREGS in the central place (c) social pensions for the elderly, widows, persons with disabilities and agricultural labourers (d) health protection (e) food security and (f) housing, water and sanitation.

LABOUR AND LABOUR WELFARE

Labour and Labour Welfare is of critical importance since it directly deals with the livelihood of working people. Kerala has responded to the need for labour welfare and development very differently from the national economy, especially in the context of globalisation. The State has increasingly followed a rights-based approach to the changing needs of the labour market. The policy initiative of the government seeks the overall growth and development of both the industry and the individual worker who have equally contributed to the progress of the State. Workers in Kerala have been protected through the consistent intervention of the Government in respect of the right to engage in work of one's choice, right against discrimination, prohibition of child labour, social security, protection of wages, redressal of grievances, right to organize and form trade unions, collective bargaining and participation in management. The Government is of the view that every employee/worker should be a member of a

Welfare Board and must be protected by the State throughout their lives. Currently around 32 Labour Welfare Fund Boards exist in the State, of which 16 are under the Labour Commissionerate.

In spite of achieving adequate level of growth rate since 2002-03, Kerala faces important challenges in the labour sector in terms of high rates of unemployment and under employment, a low rate of productive employment creation, inadequate levels of skill creation and training, low level of labour force participation and a smaller worker population ratio. On the whole, the State has to create employment opportunities and employment-intensive growth. The labour force must shift from low-value added to high-value added activities. The State aims to achieve a job-induced growth in the economy to create new jobs in both urban and rural Kerala, a unified and consolidated legislation for social security schemes, re-prioritisation of allocation of funds to benefit vulnerable workers,

long term settlements based on productivity, labour law reforms in tune with the times, amendments to the Industrial Disputes Act, 1947 and a complete revamping of the curriculum and course content in Industrial Training Institutes. Monitoring and Evaluation have also been considered integral to labour reforms against the backdrop of increasing inter-State and international migration.

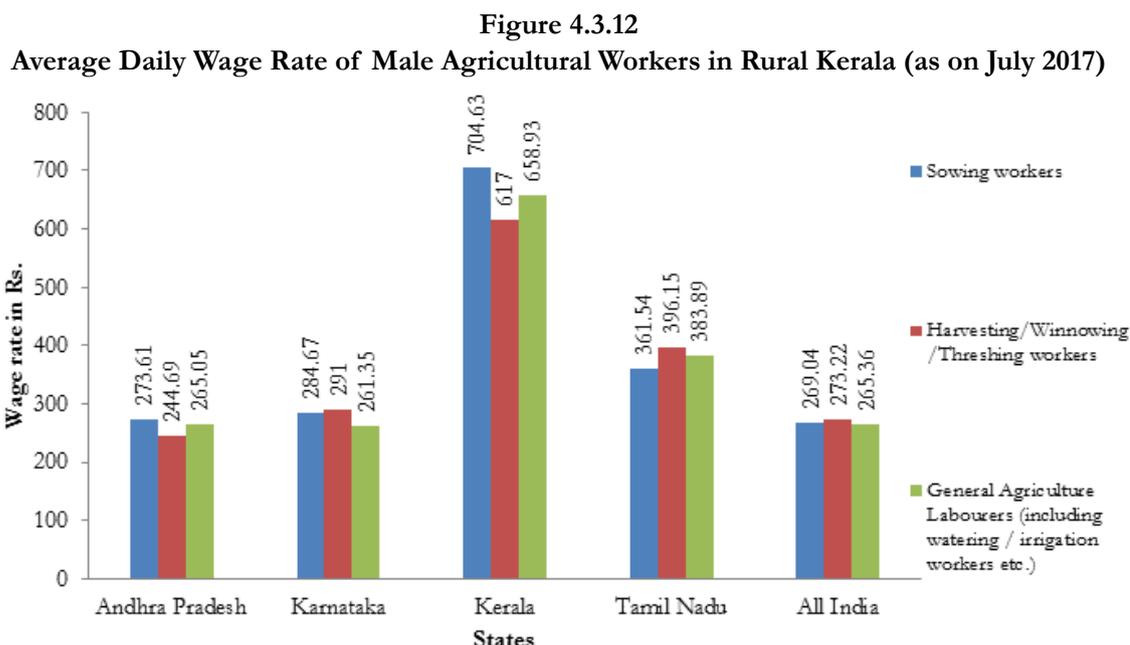
Daily Wage Rate

The reported wage rate of workers in the agricultural and non-agricultural sectors in Kerala is higher than in other States. The average daily wage rate of agricultural and non-agricultural workers in India published by the Labour Bureau, Government of India shows that for male general agricultural workers in rural Kerala it is ₹658.93 in July 2017. The national average for this category of workers is only ₹265.36. The wage rate in Kerala is thus higher than the rest of the country by a factor of 2.5. **Figure 4.3.12** shows the average daily wage rate of male agricultural workers in rural areas as compared to the national average and the average across the southern States.

With respect to female agricultural workers in rural Kerala, the average daily wage rate in July 2017 is ₹442.5 compared to the national average of ₹206.59. The wage rate for sowing and harvesting workers in Kerala are ₹502.36 and ₹526.53 respectively, compared to the national average of ₹221.31 and ₹233.67. A comparison of the daily wage rates of female agricultural workers in southern States is given in **Figure 4.3.13**.

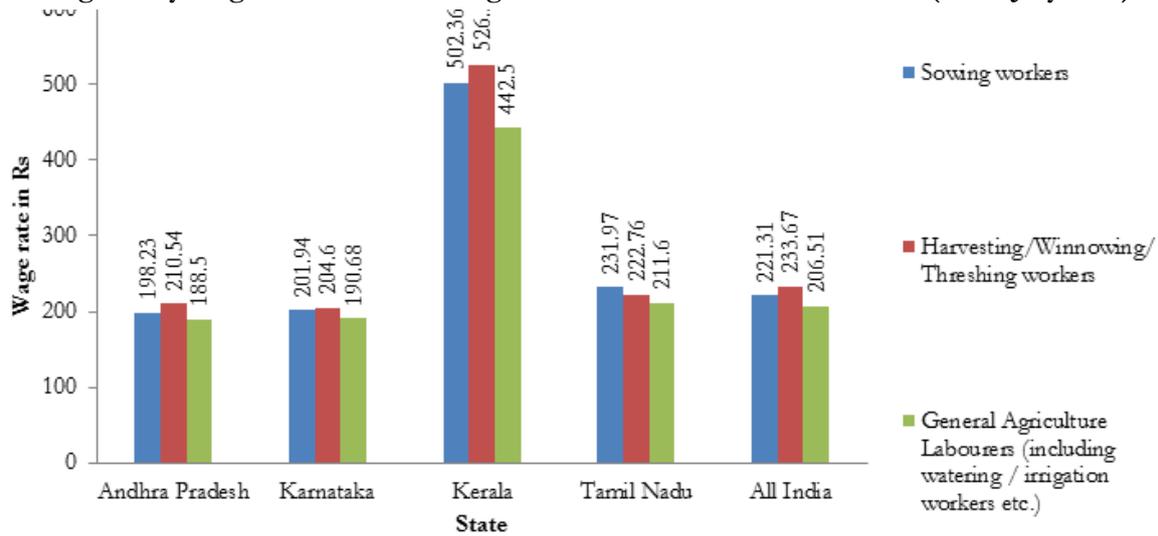
Even though the wage rates of agricultural labourers in rural Kerala are higher than the wages in other parts of the country, the wage disparity between male and female workers is quite significant. The male-female wage gap among the rural workers engaged in general agriculture is 33 per cent with the wage rate for the female worker being 67 per cent of the male workers' wage rate. **Figure 4.3.14** shows the male-female difference among agricultural workers in Kerala and other southern States of India.

The average daily wage rates in Kerala are much higher than the minimum wage, and this attracts in-migrants into the State, especially from areas where wage rates are very low. Further, the wide



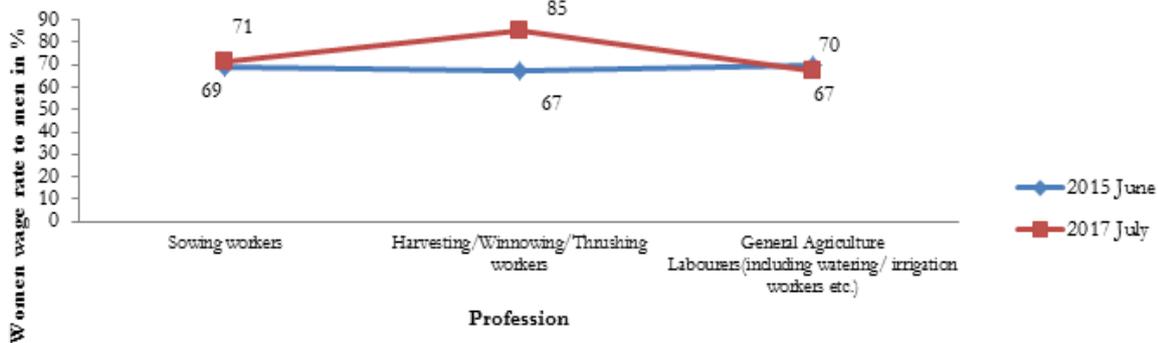
Source: Ministry of Labour and Employment, GOI

Figure 4.3.13
Average Daily Wage Rate of Female Agricultural Workers in Rural Kerala (as on July 2017)



Source: Ministry of Labour and Employment, GOI

Figure 4.3.14
Wage Gap Among Male and Female Rural Agricultural Workers



Source: Ministry of Labour and Employment, GOI

disparity in male-female wage rates is an indication of the fact that the perception of gender equality is far from being realised. The average daily wage rate of non-agricultural workers in rural Kerala in July 2017 is shown in **Figure 4.3.15**. Wage growth in Kerala for the period July 2016 to July 2017 is given in **Figure 4.3.16**.

Composition of Workers

The labour community in Kerala mainly consists of those who are engaged in the informal sector

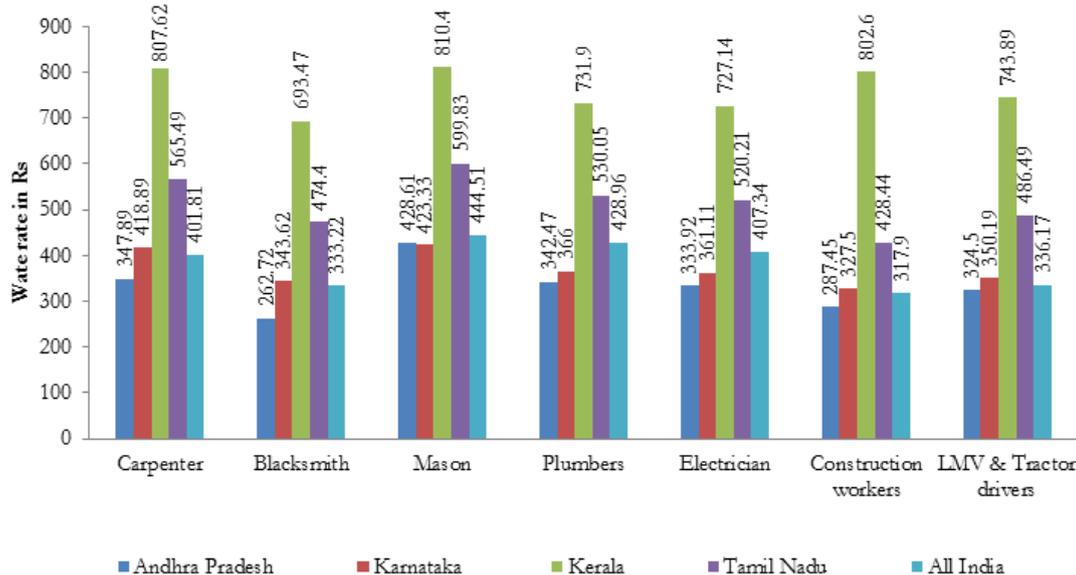
(loading and unloading, casual work, construction work, brick-making, self-employment, etc), the traditional industries (coir, cashew, handloom, beedi-making, etc), the manufacturing sector (small, medium and large industries), the IT industry, the units in export promotion zones and those who are seasonally employed.

Industrial Relations

Healthy relations between employer and employee are the key to sustained industrial development.

Figure 4.3.15

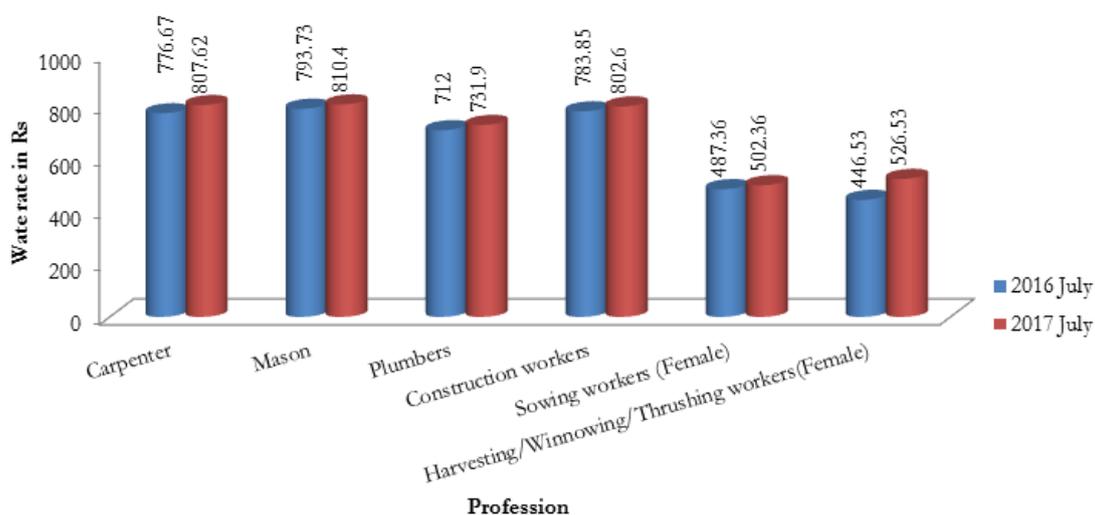
Average Daily Wage Rate of Non-Agricultural Workers in Rural Kerala (July 2017)



Source: Labour Bureau, Ministry of Labour and Employment, GOI

Figure 4.3.16

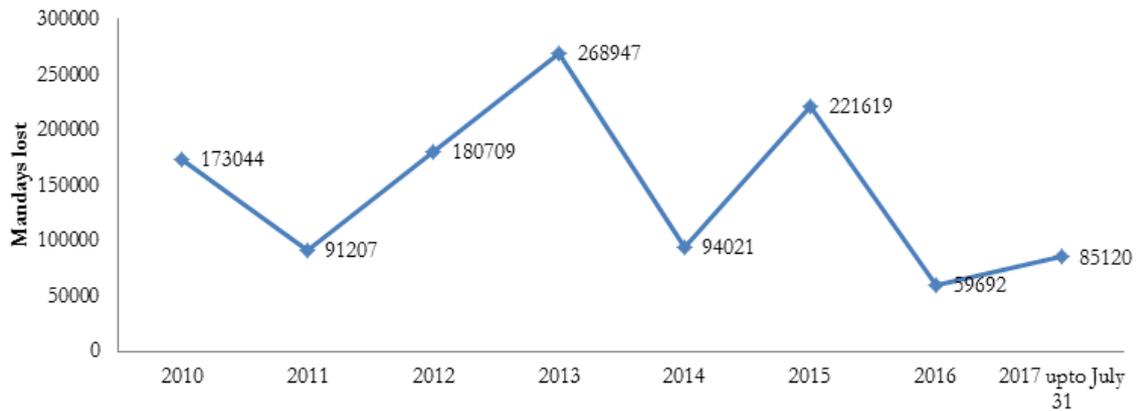
Wage Growth in Kerala for the Period July 2016 to July 2017



The responsibility of the Labour Department is to aid in this and to help maintain a harmonious balance between the labourers demands and the management in order to maintain an atmosphere conducive to achieving the objective of industrial growth and prosperity in the State.

The strikes of labour in the State has reduced significantly over the years. The man-days lost due to strikes in the State for the year 2017 (up to July) was 85.12 thousand as against 2.68 lakh in the year up to July 2013. **Figure 4.3.17** shows the mandays lost due to strikes in Kerala.

Figure 4.3.17
Mandays Lost Due to Strikes



Source: Labour Commissionerate, GOK.

Mandays Lost Due to Lockout

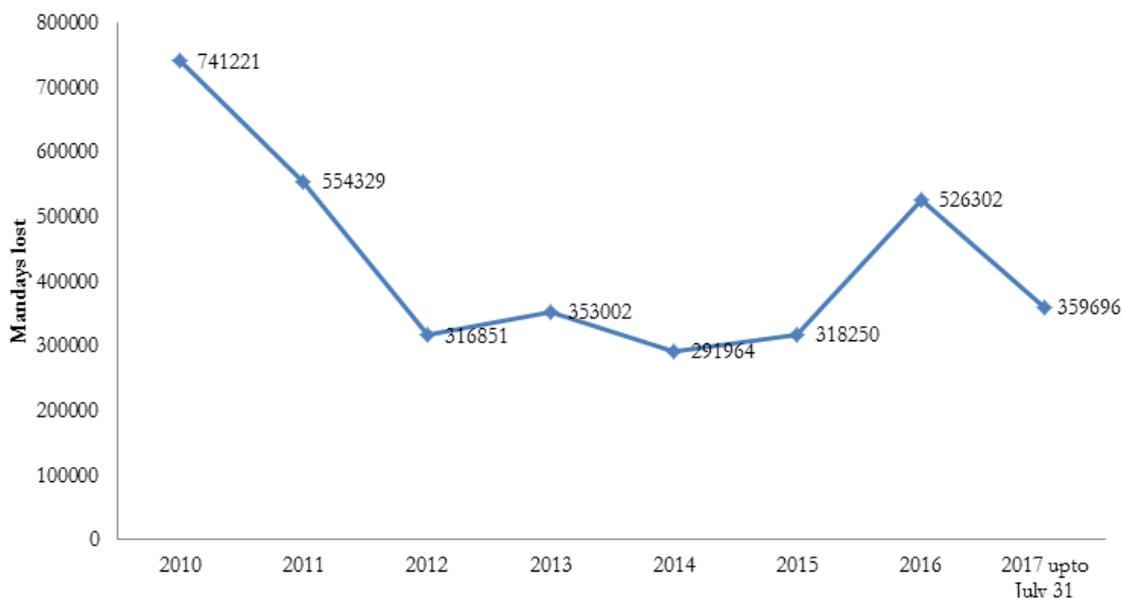
The number of mandays lost due to lock-outs has been showing an increasing trend over the last two years. During the year 2014, total mandays lost due to lock out was 2.91 lakh, which increased to 5.26 lakh in 2016. However, total mandays lost due to lock out up to July 2017 is 3.59 lakh.

Figure 4.3.18 shows the details of man days lost due to lock outs in Kerala. This is despite the fact

that for the last ten years, the number of working factories in the State has steadily increased.

The number of working factories in the State in 2005 was 17,641, and this has now increased to 22,998. Subsequently the average daily employment creation in these factories increased from 4.46 lakh in 2005 to 7.02 lakh in 2016 and 6.78 up to July 2017. **Figure 4.3.20** and **Figure 4.3.21** shows the number of working factories and employment details in Kerala respectively.

Figure 4.3.18
Mandays Lost Due to Lockout in Kerala



Source: Labour Commissionerate

Box 4.3.13**Concepts Defined in Industrial Disputes Act, 1947**

Strike :-Section 2(q) of the Act defines the term ‘strike’ as cessation of work by a body of persons employed in any industry acting in combination or a concerted refusal, or a refusal under a common understanding of any number of persons who are or have been so employed to continue to work or to accept employment.

Lockout: Lockout, as defined in section 2(1), means the temporary closing of a place of employment, or the suspension of work, or the refusal by an employer to continue to employ any number of person employed by him.

Layoff :- As per section 2(KKK) of the Act, ‘Lay Offs’ means the failure, refusal or inability of an employer on account of shortage of coal, power or raw materials or the accumulation of stocks or the breakdown of machinery or natural calamity or for any other connected reason to give employment to a workman whose name is borne on muster rolls of his industrial establishment and who has not been retrenched.

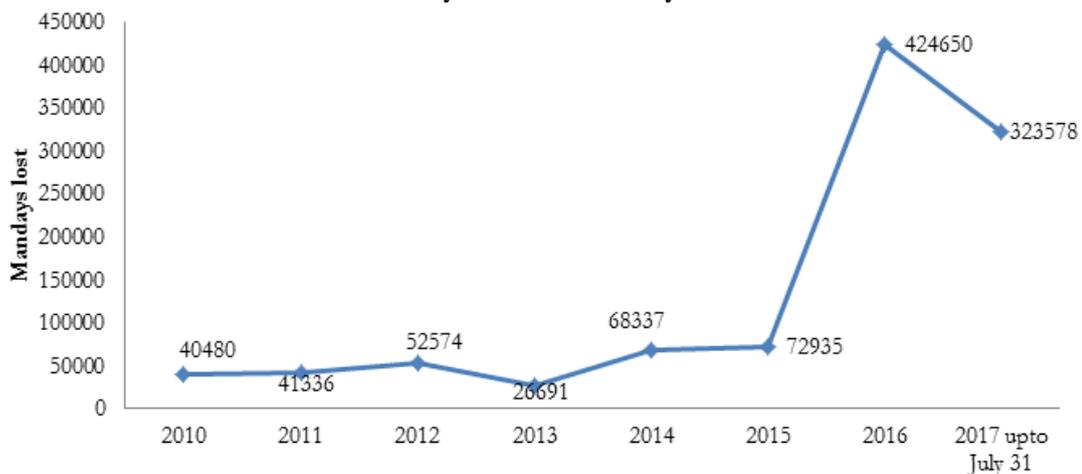
Source: Statistics on Industrial Disputes, Closure, Retrenchments and layoffs in India during the year 2013, Labour Bureau, Ministry of Labour, GOI

Industrial Disputes

Providing a platform for raising grievances and settlement of the issues between employee and employer is an essential requirement for ensuring harmonious labour relations in the State. The Industrial Disputes Act of 1947 provides the legal framework for the same though it applies only to the organised sector. It also regulates layoffs and retrenchment. The number of disputes pending at the beginning of the year decreased from 3,890 in 2013-14 to 2,913 in 2016-17.

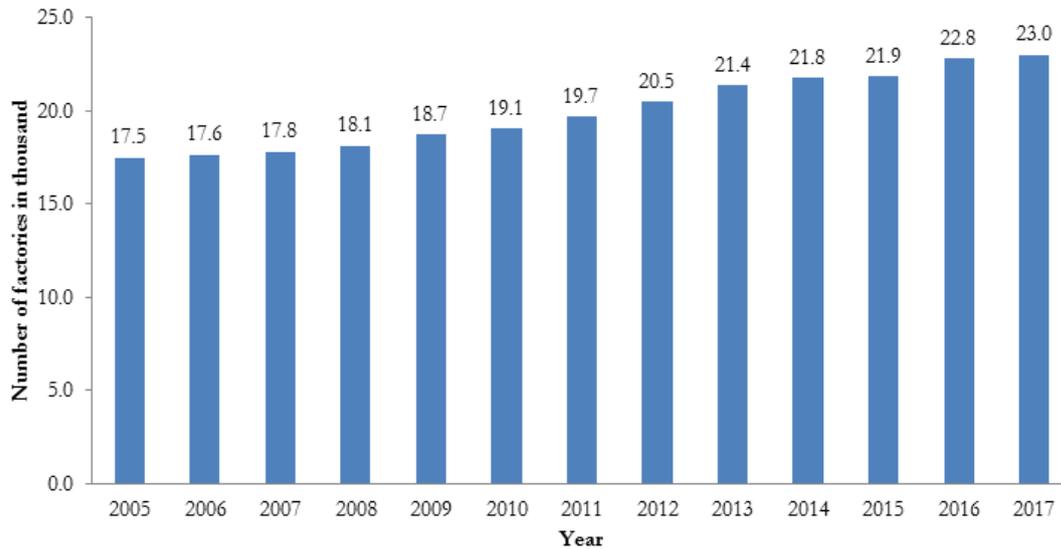
There is an improvement in the settlement rate of disputes as well. The total disputes handled during 2013-14 was 5,909 and the disputes settled for the same period was 2,384 which means that 40.3 per cent of the disputes were settled during that period. In 2016-17 the number of disputes handled was 6,682 and the number settled was 3,214 which works out to 48 per cent of the disputes. Details of the number of disputes in Kerala are given in **Figure 4.3.22**. Additional details are given in **Appendix 4.3.61**.

Figure 4.3.19
Mandays Lost Due to Layoffs



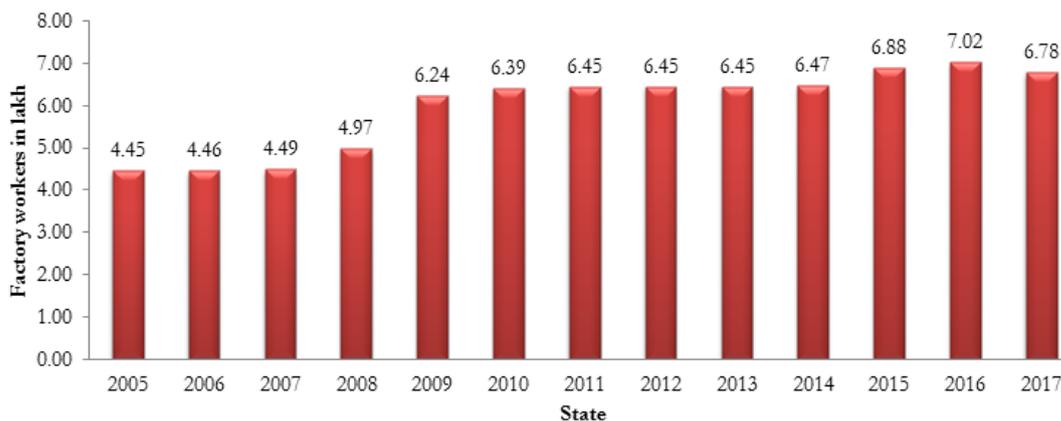
Source: Labour Commissionerate

Figure 4.3.20
Number of Working Factories in Kerala (in thousand)



Source: Factories and Boilers Department, GOK

Figure 4.3.21
Number of Factory Workers

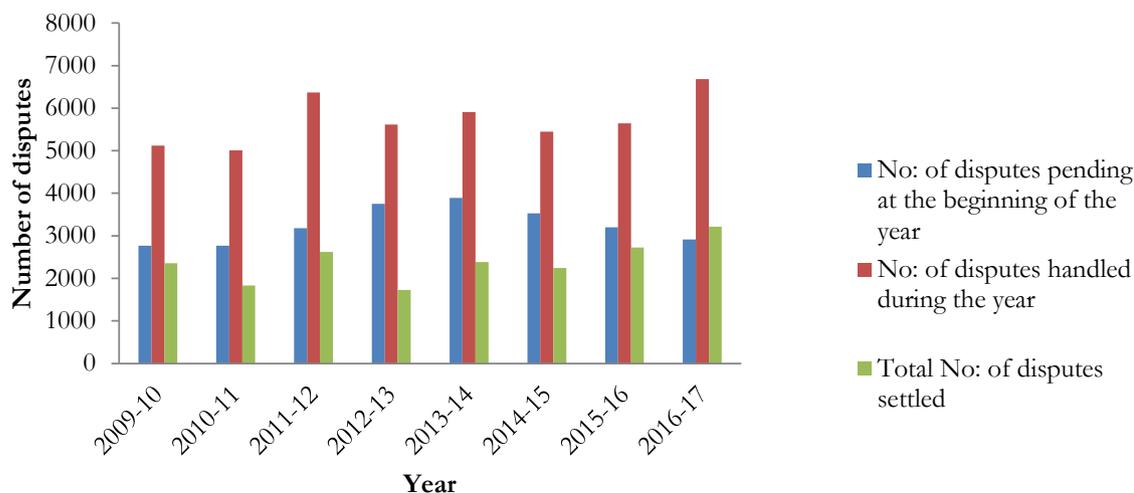


Safety of the Factory Workers

The Department of Factories and Boilers is a statutory authority that works to ensure the safety, health and welfare of all workers in factories and the general public living in the vicinity of factories through the implementation of various laws. The department enforces various programmes designed to ensure the safety of the workers. In 2017-18 (upto July 31, 2017), 28 priority inspections have been carried out in Major Accident Hazard (MAH) factories, 24 air monitoring studies were completed

in hazardous factories, 1 medical examination of crusher factory workers and 112 inspections of hazardous factories other than MAH factories. The Department has been conducting training programmes not only for factory workers and employees but also for school children and the general public living in the surrounding areas. Details of industrial accidents and number of establishment/workers are given in **Appendix 4.3.62** and **Appendix 4.3.63**. The programmes conducted Factories and Boilers Department are given in **Appendix 4.3.64**.

Figure 4.3.22
Details of Industrial Disputes in Kerala, 2009 to 2016



Source: Labour Commissionerate, GOK

Rashtriya Swasthya Beema Yojana (RSBY)

The Rashtriya Swasthya Beema Yojana (RSBY) is a Health Insurance Scheme for BPL workers and their families in the unorganized sector. This was introduced in 2008-09 in all the 14 districts of Kerala. The annual insurance cover or in-patient treatment benefit is for a maximum amount of ₹30,000 for a family of 5 members including the worker, spouse, children and dependent parents (if included in the BPL family list). The annual insurance premium is fixed through a tender process. The State Government provides 40 per cent of the premium and administrative costs. The Central Government provides 60 per cent of the premium (including cost of smart card) directly to the implementing agency, CHIAK (Comprehensive Health Insurance Agency, Kerala). The beneficiaries are required to pay only ₹30 as registration fee.

Comprehensive Health Insurance Scheme (CHIS)

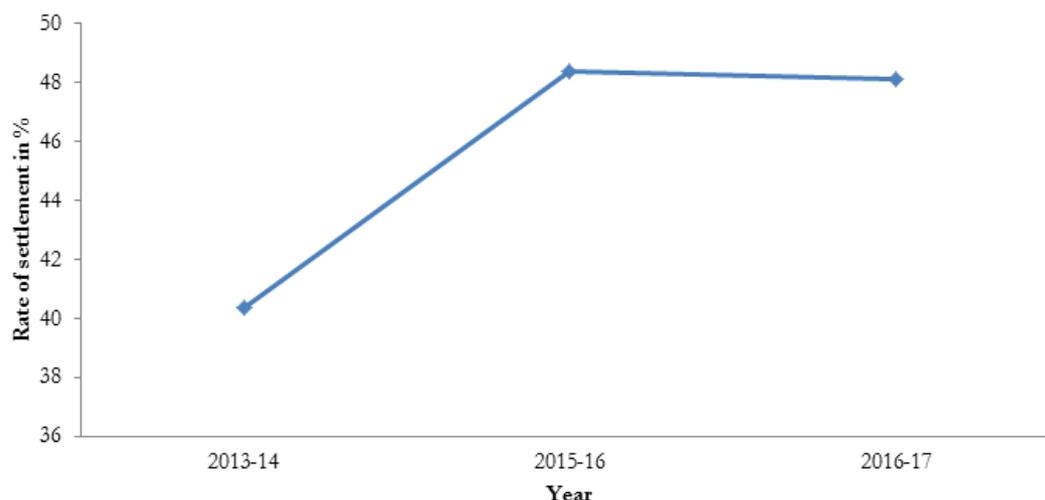
Comprehensive Health Insurance Scheme (CHIS) extends to all families other than the BPL families

as per the guidelines of the Government of India. The non-RSBY population is divided into two categories: (a) those belonging to the BPL (poor) list of the State government but not to the list as defined by the Government of India and (b) APL families that belong neither to the State Government list nor to the list prepared as per the guidelines of the Government of India. In the case of families belonging to category (a), the beneficiaries are required to pay ₹30 per annum per family as beneficiary contribution towards a Smart Card. Under the CHIS, a family can avail in-patient benefit of upto ₹30,000 as in the case of RSBY. The entire premium is paid for by the State Government. Government and Private hospital wise details of the utilization of the scheme is given in **Table 4.3.20**. Given the fact that only empanelled hospitals (Public, Private and co-operative hospitals) are allowed to offer RSBY/CHIS benefits, the quality of services is assured. Further, the coverage is likely to be increased to ₹100,000. In addition to RSBY and CHIS, the State government has also introduced another scheme called CHIS Plus.

Aam Admi Bima Yojana

The Government of India has launched a new insurance scheme called the Aam Admi Bima Yojana

Figure 4.3.23
Settlements of Industrial Disputes in Kerala, 2013 to 2016 (in per cent)



(AABY) covering 48 categories of households in the country. This has been implemented in the State since 2007-08. As per the scheme, the head of rural landless families or one earning member in each such family will be insured. This scheme is also implemented through CHIAK. The premium under the scheme will be ₹200, of which, 50 per cent shall be a subsidy from the fund created for this purpose by the Central Government and the remaining 50 per cent is to be contributed by the State Government.

Employees State Insurance Scheme

The Employees' State Insurance Scheme (ESI Scheme) of the Indian Government aims at protecting 'employees' in event of sickness, maternity, disability and death due to employment injury and to provide medical care to insured persons and their families. The comprehensive social security provisions are based on the ESI

Act 1948. This scheme covers all the employees working in factories running on non-seasonal power that employ 10 or more persons, and factories not using power that employ 20 or more persons. It also includes those working in shops, hotels, restaurants, cinemas, road motor transport undertakings and newspaper establishments. Each insured employee and their employer are required to contribute a certain percentage of their wages to the ESIC every month. The ceiling wage rates are revised from time to time.

The ESI Scheme runs like most of the social security schemes. It is a self-financing health insurance scheme and the contributions are raised from covered employees and their employers as a fixed percentage of wages. The payments are to be made on a monthly basis. An employee covered under the scheme has to contribute 1.75 per cent of the wages whereas the employer contributes 4.75 per cent of the wages payable

Table 4.3.20
Physical and Financial Achievements of RSBY/CHIS

Year	Number of patients, in lakh			Amount, ₹ in crore		
	Public	Private	Total	Public	Private	Total
2015-2016	3.71	1.53	5.24	145.32	60.27	205.59
2016-2017	3.88	1.95	5.83	167.65	91.78	259.43
Total	7.59	3.48	11.07	312.97	152.05	465.02

Source: Labour Commissionerate

to an employee. The total contribution in respect of an employee thus works out to 6.5 per cent of the wages payable. However, employees earning less than ₹50 a day are exempted from making the contribution. All insured persons and dependants are entitled to free, full and comprehensive medical care under the scheme. This medical care is provided through a network of ESI dispensaries, empaneled clinics, diagnostic centres and ESI hospitals. Super speciality facilities are also offered through empaneled advanced medical institutions. Currently, six types of benefits are provided. These are medical, sickness, maternity, disability, dependants' and funeral expenses. In Kerala there are 142 dispensaries and their distribution across the State is given in **Figure 4.3.24**.

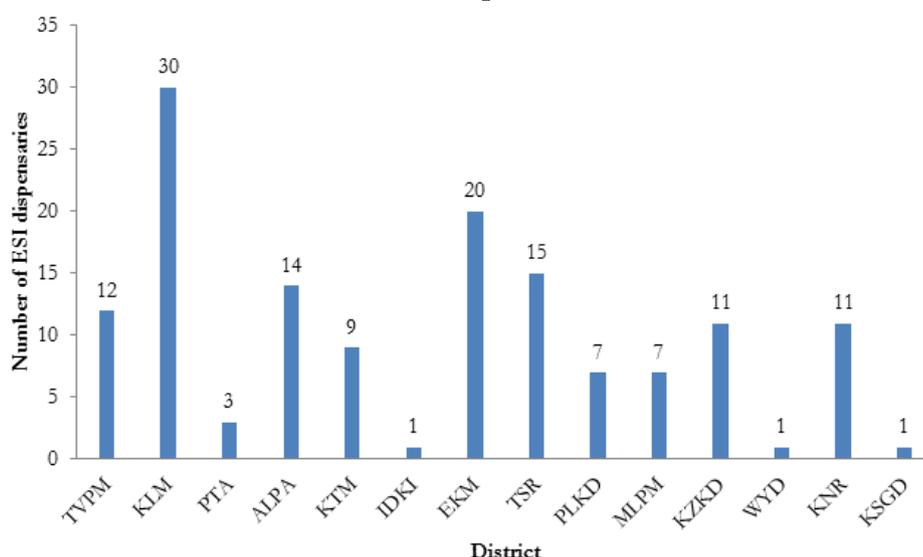
Migrant Labour

The recent trend in the labour market in the State shows a large inflow of migrant workers from other States such as West Bengal, Bihar, Odisha, Uttar Pradesh, Chhattisgarh, Jharkhand and so on besides the neighbouring States. Working conditions of the inter-State migrant workmen are dealt with under the Inter State Migrant Workmen Regulation of Employment and Conditions of Service Act, 1979. As per the provisions of the Act,

the contractor has to obtain a recruitment license each from the State from which the workers have been recruited (Original State) and from the State where they are employed (Recipient State). Accordingly the contractor and the principal employer become legally obliged to ensure the implementation of the provisions envisaged in the enactment as the immediate employer and the principal employer respectively. But usually these workers cannot be brought under the purview of the enactment due to lack of statutory ingredients required to attract the ambit of the enactment such as an intermediary third party/contractor between the principal employer and the workmen. These workers are compelled to live in groups under unhygienic conditions near their working place with no access to proper health facilities.

The distribution of migrant workers from different States is given in **Figure 4.3.25**. As shown in the figure 47 per cent of Inter State Migrant (ISM) workers are from West Bengal followed by Orissa (15 per cent) and Assam (11 per cent). The district-wise distribution of ISM workers in the State shows that Ernakulam has the highest proportion of 17 per cent followed by Wayanad with 13 per cent and Kannur 11 per cent. **Figure 4.3.26** presents the

Figure 4.3.24
District-wise ESI Dispensaries in Kerala



Source: Directorate of Insurance Medical Services, Thiruvananthapuram

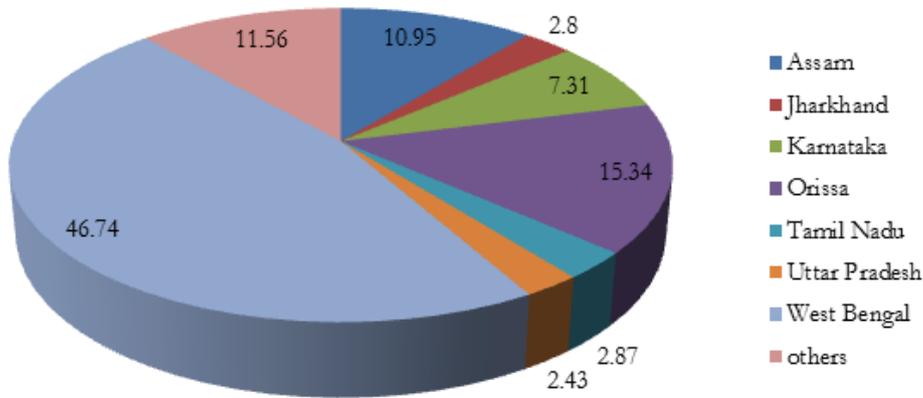
distribution of ISM workers by district. Details are given in **Appendix 4.3.65**.

These ISM workers are engaged in different areas such as agriculture, construction, the hotel and restaurant industry, manufacturing and trade. It is seen that 60 per cent of the migrant workers are engaged in the construction sectors, 8 per cent in manufacturing, 7 per cent in hotels and restaurants, 2 per cent each under trade and agriculture and the remaining 21 per cent are engaged in other activities.

Labour Force Participation Rate (LFPR)

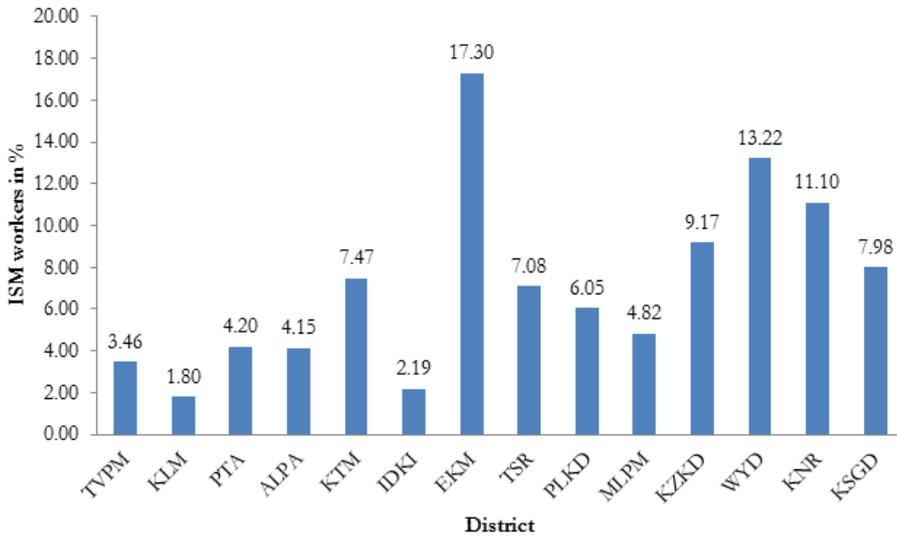
The situation of the labour force in Kerala can be gauged from the indicators such as LFPR, WPR, daily wage rate and trend in industrial relations. Among all the Indian States, low level LFPR remains a perpetual characteristic of the Kerala labour market. Apart from a slight increase of LFPR in the urban region, labour force participation has been constant over the last two years. As per the 5th Annual Employment and Unemployment Survey (2015-16) of the Labour

Figure 4.3.25
Origin-wise Inter-State Migrant Workers in Kerala



Source: Labour Commissionerate, GOK

Figure 4.3.26
District-Wise ISM Workers in Kerala



Source: Labour Commissionerate

Bureau, Ministry of Labour, Government of India, LFPR in Kerala is 50 per cent, a marginal increase by 0.3 per cent over the year 2013-14. Even if we are at par with the national average, LFPR in our neighbouring States is better at 62.5 per cent, 58.1 and 55.5 per cent in Andhra Pradesh, Tamil Nadu and Karnataka respectively. Similarly in rural areas, we are not only distant from the national average but also from the rates in neighbouring States of Andhra Pradesh and Tamil Nadu where it is 69.2 and 65.8 per cent respectively. **Figure 4.3.27** shows the LFPR of Kerala and other southern States.

Yet another aspect of significant concern is the low female labour force participation rate. India's rank in female LFPR is 136 among 148 countries. North eastern and southern States, in general, have a higher LFPR compared to low levels in northern States. In this regard, Kerala female LFPR is 30.81. It is lower compared to other southern States such as Andhra Pradesh (46.6 per cent), Tamil Nadu (39.2 per cent) and Karnataka (32.7 per cent).

Worker Population Ratio (WPR)

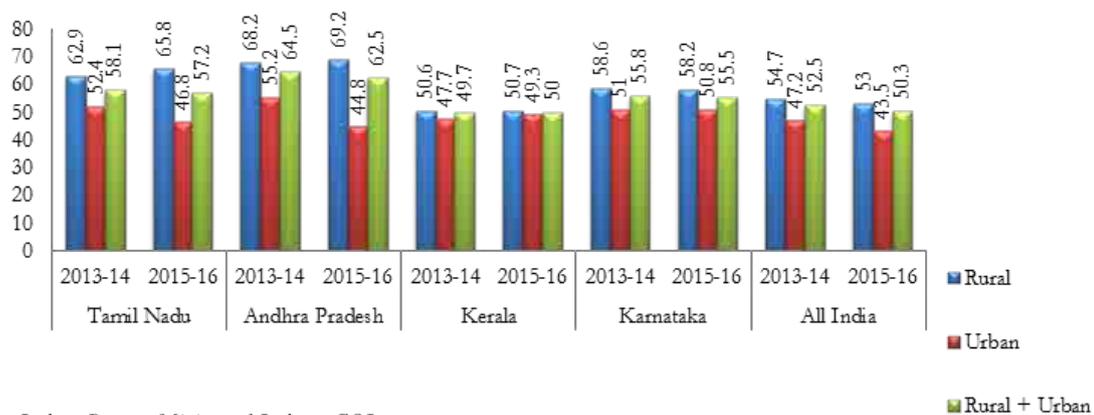
Worker Population Ratio (WPR) is an indicator used in the analysis of the employment situation and in understanding the proportion of the population actively contributing to the production of goods and services in the economy. The 5th Annual Employment and Unemployment Survey of the

Labour Bureau, Ministry of Labour, Government of India shows a declining trend in WPR. The WPR is declining in India. The same trend is seen in the southern States as well. The WPR in Kerala is 43.8 per cent as against the all India average of 47.8 per cent. Among the southern States, the performance of Andhra Pradesh is admirable at 60.1 per cent followed by Tamil Nadu and Karnataka at 54.8 and 54.7 respectively. In rural Kerala, the WPR is reported as 44.3 per cent as against 66.6 and 62.9 per cent in Andhra Pradesh and Tamil Nadu. **Figure 4.3.28** shows the trend of WPR in Kerala and the other southern States.

Self Employed Persons in Labour Force

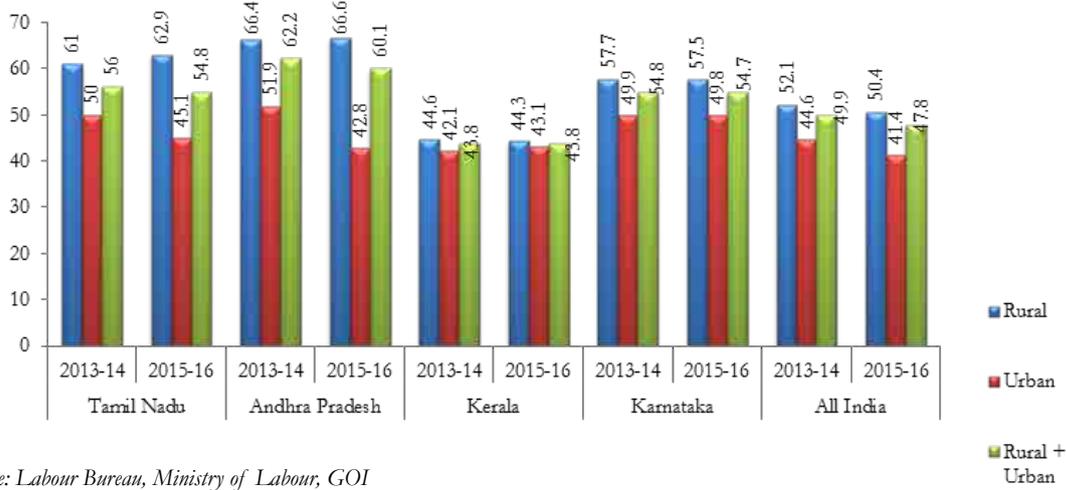
Labour force engaged in self-employment in the State is 27 per cent which is 19.6 per cent lower than the national average. The male-female gap in self-employment labour force in the State is 9.8 per cent which is 1.3 per cent higher than the national average of 8.5 per cent. Even if self-employment among the labour force is high in Karnataka, the difference between male and female self-employed persons is high at 14.8 per cent. In Andhra Pradesh the gender gap is as low as 4.6 per cent. **Figure 4.3.29** shows the percentage of self-employed persons in the labour force and the gender gap in Kerala and other States.

Figure 4.3.27
LFPR as per Usual Principal Status, for Persons Aged Above 15



Source: Labour Bureau, Ministry of Labour, GOI

Figure 4.3.28
WPR as per Usual Principal Status, for Persons Aged Above 15



Source: Labour Bureau, Ministry of Labour, GOI

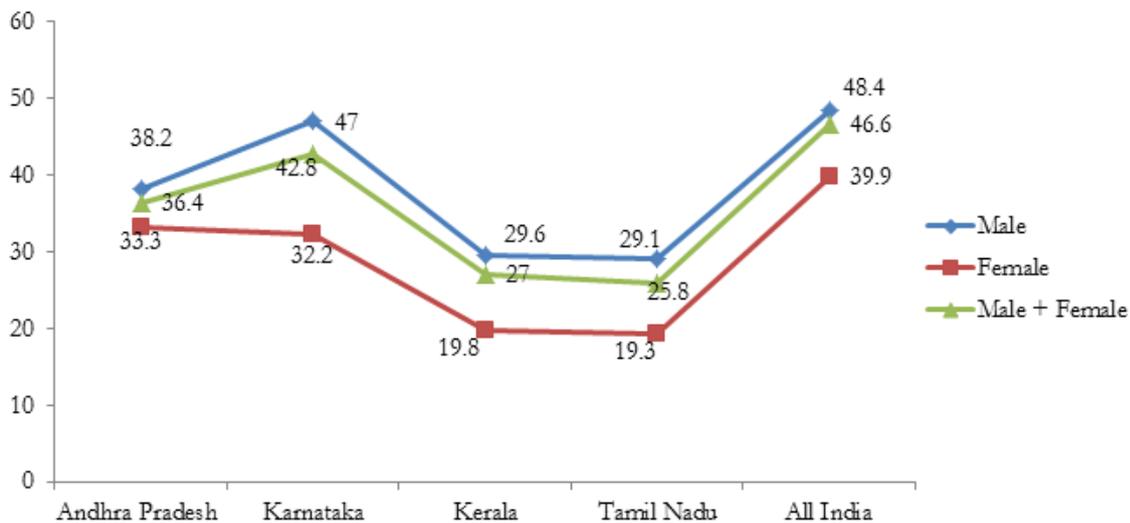
Workers Available and Actually Worked

Out of the total workforce available for 12 months, the actual percentage of workers engaged in work for 12 months is 63.4 in Kerala. In Karnataka and Tamil Nadu it is 70.8 and 70.7 respectively. Period wise classification in Kerala shows that 24.7 per cent of the workers were engaged in work for a period of 6 to 11 months and 10.4 per cent of workers were engaged in work for 1 to 5 months. **Figure 4.3.30** shows the details of workers

available for 12 months and the percentage of those that actually worked in Kerala and other southern States.

A gender-wise classification shows that male workers actually engaged in work available for 12 months was 69.3 per cent and female workers for the same period was 50.6 per cent in Kerala. Generally, male workers register more days actually worked than the female workers. The male-female difference for the workers available for 12 months

Figure 4.3.29
Percentage of Self Employed Persons in Labour Force



Source: Labour Bureau, Ministry of Labour, GOI

and actually worked in Kerala is 18.7 per cent which is 8 per cent higher than Karnataka, 4.9 per cent higher than Tamil Nadu and 4.7 per cent more than the all-India average of 14 per cent. **Figure 4.3.31** shows the male and female workers available for 12 months but actually worked in Kerala and other southern States.

Workers Availing Social Security

Workers' social security plays a vital role in the economic and social livelihood of every worker. A worker in Kerala is relatively better protected

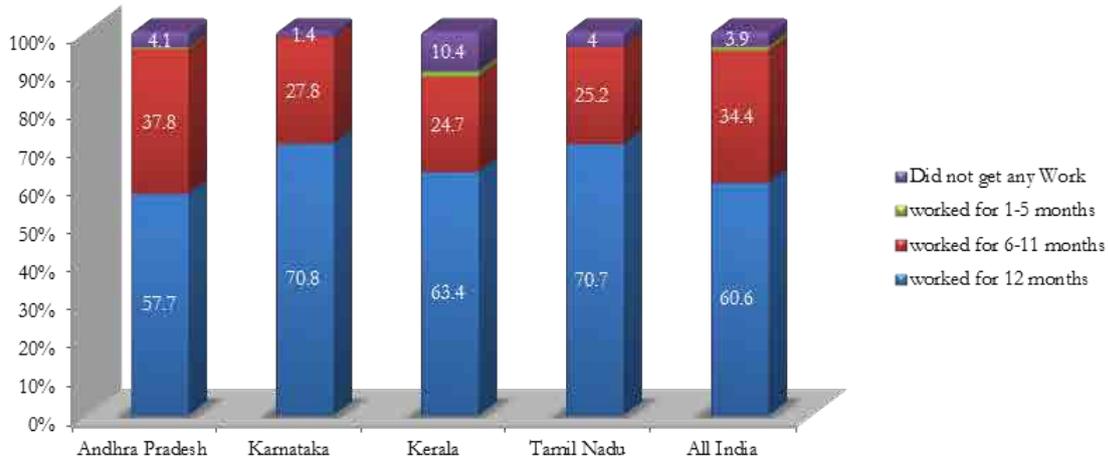
than those in other parts of the country. As per the report of the 5th Annual Employment and Unemployment survey, the percentage of workers except self-employed who avail social security in Kerala is 23.2 which is 1.6 per cent higher than at the national level and 9.8 higher than Andhra Pradesh and 2.9 per cent higher than Tamil Nadu. Among the southern States, Karnataka provides social security to 27.1 per cent of the workers except those are self-employed. **Figure 4.3.32** shows the details of workers except self-employed availing social security in Kerala and other parts of southern India.

Box 4.3.14

Major Recommendations of the Working Group on Labour, Employment, and Skills

- Provide institutional safeguards for all workers through secure income from work during and beyond the period of active work.
- Set up State level regulatory authority to oversee the mobilisation and distribution of funds among the target groups of the various programmes.
- Reduce gender gap in terms of participation, wages, earnings, and skills.
- A mechanism for the provision of social assistance to self-employed who are own account workers and casual labour hired on a daily basis.
- All workers of the informal sector, who might be holding regular jobs, deserve a decent retirement income commensurate with their lifetime earnings. The savings required for it can be mobilised through social insurance schemes.
- Maintain healthy industrial relations and thereby ensure steady progress in industrialisation and employment opportunities.
- Improve labour productivity and efficiency.
- Ensure safety and security of workers.
- Steps to create highly skilled and globally recognised workforce
- Existing labour law enforcement mechanism is to be strengthened. Sufficient inspectors should be deployed to strengthen enforcement.
- The sector wise Industrial Relation Committees (IRCs) and other tripartite labour committees should be strengthened and should meet regularly. State level IRCs should also meet regularly. It is important for maintaining good industrial relations in the State.
- Welfare boards in similar/identical areas shall be merged to reduce establishment costs.
- A housing scheme for plantation labourers is essential.
- Minimum wage should be ensured to the migrant labourer, and compensation for the family of the deceased or injured should be a part of it.
- The Local Governments may be advised to follow regulations regarding renting out premises to the Domestic Migrant Labourers (DML). Registration of all rented buildings and regular inspection of facilities for proper water supply, sanitation, hygiene, and waste management may be carried out.

Figure 4.3.30
Workers Available for 12 Months but Actually Worked (in per cent)



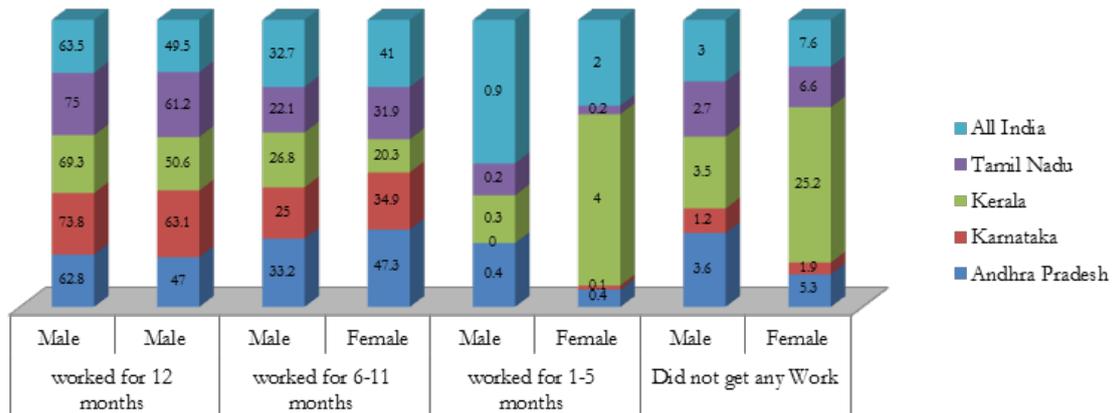
Source: Labour Bureau, Ministry of Labour, GOI

Social Security and Paid Leave for Casual Workers

Casual workers are not part of the permanent workforce, but they supply services on an irregular or flexible basis, often to meet a fluctuating demand for work. The level of benefits received by the casual workers is a pointer towards the labour-friendly approach of the society. Benefits received by casual workers in Kerala are relatively much better than in other States of the country.

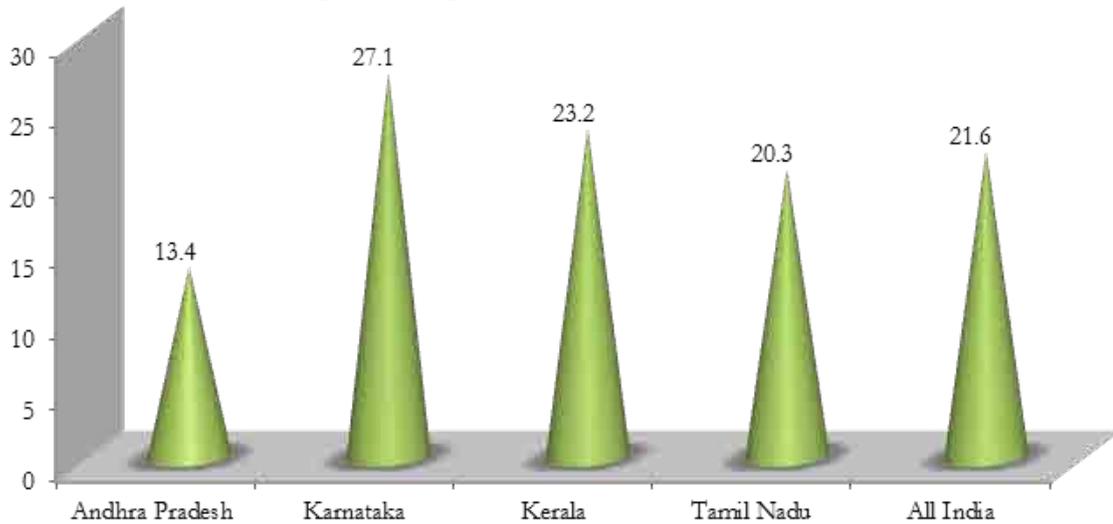
The casual workers who receive social security in Kerala form 5.7 per cent which is 2.9 per cent higher than the national average. In case of paid leave, 5.4 per cent of the casual workers in Kerala received the benefit which is 3.7 per cent higher than the national average and 4.9 per cent higher than Andhra Pradesh and 4.2 per cent than Karnataka. **Figure 4.3.33** shows the percentage of casual workers received paid leave and social security in Kerala and other parts of the south India.

Figure 4.3.31
Male – Female Workers Available for 12 Months but Actually Worked (in per cent)



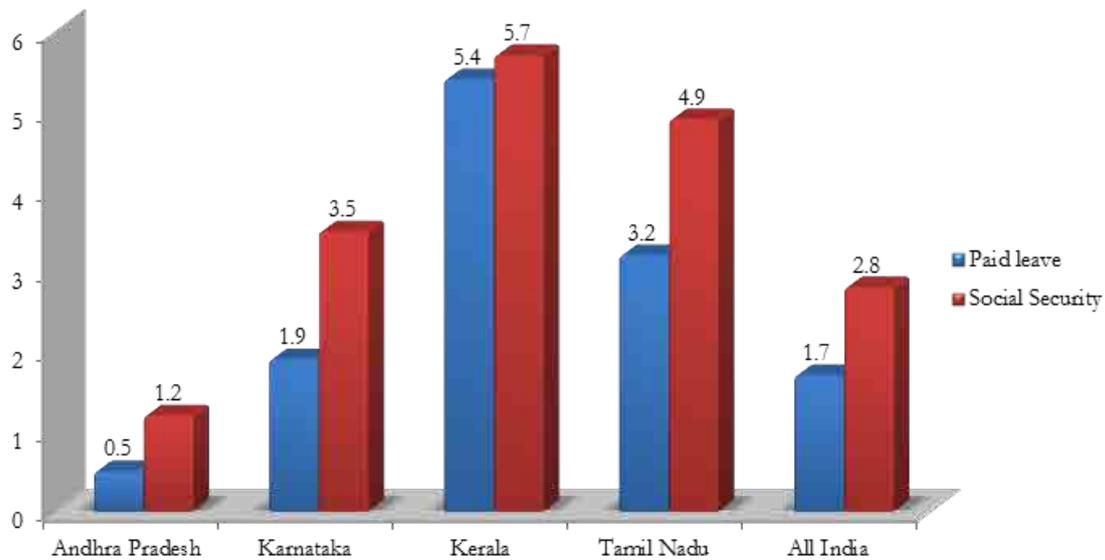
Source: Labour Bureau, Ministry of Labour, GOI

Figure 4.3.32
Workers Except Self-employed Who are Availing Social Security



Source: Labour Bureau, Ministry of Labour, GOI

Figure 4.3.33
Casual Workers Received Paid Leave and Social Security (in percentage)



Source: Labour Bureau, Ministry of Labour, GOI

Outlook

Given the changing dynamics of the employment landscape of the State, the role of the Labour Department needs to be restructured in order to ensure a healthy employer-employee relationship in the long term. The issues confronting the vulnerable sections of the labour force are to be

addressed through effective implementation of labour laws and focused welfare policies. The most vulnerable sections of the workforce viz. women, migrant labour and the large number of labour working in the unorganized or informal sector need special care and attention.

HOUSING

Introduction

Adequate shelter that provides security and safety is a fundamental need and a basic human right. A major challenge in the 21st century is the creation of liveable urban areas, given the rapid urban growth across the world, in particular the global south. More than half the world's population now lives in cities. While the 2030 Agenda for Sustainable Development recognized the power of cities and towns which will constitute 70 per cent of the world population by 2050, SDG 11 is specifically on making cities and human settlements inclusive, safe, resilient and sustainable. Not surprisingly, the United Nations Conference on Housing and Sustainable Urban Development in 2016 (Habitat III) emphasised the need for a New Urban Agenda, which would lay out the framework for how best to promote sustainable urbanisation¹.

However, there are many developing countries on the path to urbanization but with little resources to meet basic infrastructure needs, including housing. Kerala has urbanized significantly between 2001 and 2011 and has the highest proportion of urban population, 47.72 per cent, among the States of India (31.12 per cent for all-India). There is no doubt that urban housing needs to be properly planned; the crux of the problem lies in making it inclusive and sustainable for all. Habitat III in fact showcased LIFE (Livelihood, Inclusion and Financial Empowerment) an ambitious livelihood cum housing project of Kerala launched in late 2016, as a sustainable model for development.

Kerala is ahead of other Indian States both in terms of reducing housing deprivation and better quality of housing. But the houselessness among poor people in some areas and poor quality dilapidated houses among the vulnerable sections of the

society are the major issues of housing sector in Kerala. As per the State Planning Board survey 2016 on housing of vulnerable communities, 12.04 per cent were residing in dilapidated houses. Decentralised planning since late 90s and building of houses by local bodies has addressed the problem of houselessness to a considerable extent.

The magnitude of houseless households and landless/houseless households varies across the local bodies in the State, rural and urban. From the data compiled from 1,011 Panchayats, 59 Municipalities and 5 Corporations, it is seen that 420,806 households were houseless and another 157,562 were landless in the year 2009 (Report of the Expert Group on Housing, Planning Board, 2016). Around 1,35,769 new housing units were constructed for the houseless and 10.186 households were provided with land during 2010-2015 (March 2015). Based on this data it is noted that there was (i) a gap of 285,037 housing units for those who have land and (ii) 147,376 households remained landless. Taking into account double counting or overlapping of houseless households and landless households, the Expert Group assumed that the housing shortage will be less than 432,413 (houseless and landless) and would be around 3.5 lakh units as on March 31, 2015 (inclusive of landless houseless households).

According to 2011 Housing Census there were 336 houses for every 1,000 persons in Kerala (all-India 273 houses per 1,000 persons). The growth in residential buildings in Kerala during the period 1961 to 2011 was 3 times while it was 2 times at the all India level. As per data from LIFE Mission, which is also accepted by the 13th Plan Working Group Report on Housing, out of a total of 4.32 lakh houseless families, 1.58 lakh are landless and houseless, 2.3 lakh have land but are houseless and

¹ *The Agenda provides a 20 year roadmap to guide sustainable urban development globally*

44,000 houses are incomplete. The average size and quality of housing units in Kerala are far better than in the rest of the country. More than two-third households reside in good quality houses compared to 53.1 per cent for all-India; 95 per cent of houses in Kerala were electrified while it was only 67 per cent at the all India level. However, average cost per unit of a house in Kerala is more than four times the costs at the all-India level. Using environmental resources for building construction is also a major challenge in housing. The latest housing Census also shows that 10.6 per cent of the total census houses in Kerala remain vacant.

With the aim of eradicating houselessness in the next five years, the Government has started the Total Housing Mission or Project LIFE (Livelihood, Inclusion and Financial Empowerment) a major focus area during the 13th Five-Year Plan. The Mission envisages a comprehensive rehabilitation programme for the landless-homeless in the State including programmes relating to their sustenance, like social and financial security and skill up gradation for targeting a better livelihood. LIFE Mission aims at total of around 200,000 dwelling units. This together with training and employment creation activities is expected to directly benefit

Box 4.3.15

Major Recommendations of the Working Group on Housing Sector for the 13th Five-Year Plan

- Habitat to be considered as a wholesome product including infrastructure (physical and social) and environment that includes provision for sufficient green open spaces. Promote habitat culture and habitat literacy in a campaign mode.
- Prepare a comprehensive, reliable database at LSG level that includes details about the houses as well as beneficiaries.
- Ensure suitability of the land chosen for housing after checking for criteria such as location, accessibility, topography, proximity to undesirable natural and man-made features such as garbage landfills, flood plains etc.
- Propagate cost effective and environment friendly approaches through the use of local building materials and appropriate alternate technologies.
- Co-ordinate and integrate the EWS housing programmes of line departments and public agencies
- Incremental housing to facilitate upward mobilisation of beneficiaries.
- The design of the housing should take into account location, climate, size and topography of the plot, occupational needs, socio-cultural requirements etc.
- Provide core houses to the most vulnerable sections - destitute, differently abled, aged, chronically ill, women headed households and so on - with provision for future development.
- Facilitate the beneficiaries to construct affordable houses with financial and technological support.
- Specific plans to provide housing for migrant labourers and plantation workers.
- Integrate housing programmes with training and skill up-gradation programmes thereby ensuring beneficiary participation and in turn providing livelihood opportunities to them.
- Use IT tools and services of banking institutions for improving the governance, management and monitoring of housing schemes for the weaker sections.
- Create a housing fund at each LSG level.
- Use Central and State government funds in places where local housing fund is insufficient for housing solution.
- Reserve funds for creation of research and development facilities.
- Conserve and maintain heritage buildings.
- Promote and strengthen people centered NGO's working in the shelter sector to serve as a link between end beneficiaries and government.

about 4.32 lakh families. With the help of LSGs and Kudumbasree, a comprehensive list of houseless, landless people and incomplete houses to be covered under LIFE Mission was prepared. Existing housing schemes of other Departments will be brought under this umbrella scheme. The beneficiary selection is under progress. During the 1st phase, the focus will be on completion of work related to incomplete houses.

Approach for the 13th Five-Year Plan

A safe, dignified and affordable housing to all is the strategy on Housing in the 13th Five-Year Plan of Kerala. The declared objectives of the Housing Mission to be implemented in the 13th Five-Year Plan include the following:

1. To attempt innovative methods of resource mobilisation, focussing on issues of access to housing for poor and socially excluded;
2. To improve land availability and utilise land productively, including by means of high rise options;
3. To improve capital productivity through the use of new technology and skills;
4. To position social housing towers strategically in order to address issues of urban sprawl; and
5. To link housing policy with the creation of new means of livelihood.

Need for housing for migrant workers has also been taken up seriously by the government of Kerala and reported in the section on Labour.

Agencies in the Housing Sector

The Government, both Central and the State, have been active in the housing sector with several innovative schemes and programmes to help the economically weaker sections. Housing schemes for SCs and STs were integrated with the centrally sponsored employment generating schemes such as NREP (National Rural Employment Programme), RLEGP (Rural Landless Employment Guarantee Programme) and so on. Indira Awas Yojana, a flagship programme of the Government of India, was launched in 1996 with a view to address the

housing problem of the rural poor. Centrally sponsored housing schemes such as Valmiki Ambedkar Awas Yojana (VAMBAY), Integrated Housing and Slum Development Project (IHSDP), Basic Services to Urban Poor (BSUP), National Fishermen Welfare Fund (NFWF), Interest Subsidy scheme for Housing the Urban Poor (ISHUP), Affordable Housing in Partnership (AHP), etc. provided financial assistance for constructing houses to the socially and economically weaker sections. Programmes such as Jawaharlal Nehru National Urban Renewal Mission focused on acceleration of supply of land, shelter and infrastructure with special attention to provision of basic services to urban poor and upgradation of slums. Rajiv Awas Yojana (RAY) was another scheme meant for solving the housing problem of the urban poor. Pradhan Mantri Awas Yojana (PMAY) is a recent Central government programme launched with the objective of achieving the goal of “Housing for All by 2022” and it includes two components; PMAY (Rural) and PMAY (Urban). Kudumbasree is the State level nodal agency for implementation of PMAY (Urban) and Commissionerate of Rural Development is the implementing agency of PMAY (Rural). PMAY (Rural) aims to provide dwelling units to the homeless Scheduled Castes, Scheduled Tribes, freed bonded labourers and other non SC/ST rural poor who are below poverty line and provides financial assistance for the construction of an additional room in houses occupied by SC families who have annual income below 1 lakh and a high school student in family. PMAY (Urban) scheme is to be implemented from 2015 to 2022 in all the 93 cities in the State.

More than 20 agencies are implementing housing schemes in the State. Eligibility criteria for identifying the poor for providing institutional support for housing of most of the schemes are transparent. Hence, those who fail to meet any of the criteria are not likely to get the benefit of public schemes. Local Self Government Institutions in Kerala have a prominent role in identifying the beneficiaries of housing schemes. The norms, unit cost, type design, structure and pattern of funding, and amount of subsidies vary widely across schemes. Guidelines of housing programmes of

various Departments/Implementing Agencies indicate that the unit cost varied from ₹2 lakh to ₹7 lakh in the case of individual housing schemes and ₹15 lakh to ₹85 lakh in the case of community housing programmes such as construction of flats and duplex. It can also be seen that there is difference in unit cost under different schemes of same department or implementing agency. Similarly the type design varied from 20 sq. mt to 60 sq. mt. in the case of individual houses. The subsidy rate also varied under different schemes of different implementing agencies. For instance, the eligible subsidy under Grihasree and Saphalyam schemes is ₹2 lakh each against the unit cost of ₹4 lakh and ₹3.5 lakh respectively. The eligible subsidy offered by Scheduled Caste Development Department is ₹2 lakh and Scheduled Tribes Development Department is ₹2.5 lakh for their beneficiaries. In most of the cases though there is suggestion for mobilizing beneficiary contribution for the construction of the house, it has not been strictly followed owing to various reasons. Regarding the criteria for the selection of beneficiaries, different departments follow different norms. The income limit fixed for eligibility for financial assistance is 1 lakh for Above Poverty Line beneficiaries and below 2 lakh for low income group beneficiaries by the Housing Board. It also requires that the beneficiary should have 2 to 3 cents of land for availing financial assistance for house construction.

The important agencies involved in housing include Local self-Government Department including Kudumbasree, Kerala State Housing Board, Kerala State Nirmithi Kendra, Kerala State Development Corporation for SC/ST, SC/ST Development Departments. Non-governmental agencies such as COSTFORD and Habitat Technology group, Co-operative societies and Corporations such as Kerala State Co-operative Housing Federation and Kerala Police Housing and Construction Corporation have helped in constructing houses. Several NGOs too, have contributed significantly. Other Departments like Labour, Fisheries, Sainik Welfare, Urban Affairs and Minority Welfare are also implementing various affordable housing schemes for the poor labourers and economically

weaker sections. These agencies/departments have provided assistance to construct around 5,13,795 houses during the period from 2011-12 to 2016-17 (up to March 2017). Achievements under major housing schemes by different housing agencies in Kerala are given in **Appendix 4.3.66**.

Housing Schemes and Implementing Agencies

Kerala State Housing Board

Innovative Housing Scheme: This scheme aims to provide flats on rental basis to the poor urban workers who are increasingly displaced from the city limits or from their work places. 24 flats have been constructed in 2016-17 and a total of 184 flats were constructed under the scheme in various urban centres.

Grihasree Housing Scheme: In this scheme financial assistance is given as Government subsidy at the rate of ₹2 lakh/house for the construction of houses in EWS/LIG category in their own land with the support of voluntary organizations. 1,288 houses have been assisted in 2016-17 and 157 houses up to 31 August 2017. A total of 2,337 houses were constructed under the scheme. The total number of beneficiaries was 3,144 out of which 913 were females. The total number of beneficiaries was 3,144 out of which 913 were females.

Saphalyam Housing Scheme (flats for BPL category) – The scheme envisages support services and infrastructure facilities for the construction of flats for BPL category. Unit cost of 280 sq. ft flat will be ₹3.50 lakh (₹2 lakh Government subsidy, ₹1 lakh loan from HUDCO, ₹0.25 lakh voluntary contribution from NGO and ₹0.25 lakh beneficiary contribution). 24 flats were constructed in 2016-17 and a total of 72 flats have been constructed so far under this scheme.

Kerala State Nirmithi Kendra

In 2016-17, Nirmithi Kendra conducted eight training programmes on conceptual proposal

for “Zero Energy-Zero Discharge Buildings” to create awareness in green technology concepts to students and publics at various places and seven training programmes in the production of Biogas units. Cement and Steel were supplied to various BPL beneficiaries through “Kalavaras.” National Habitat Museum was set up in the KESNIK Campus, PTP Nagar to display traditional building material, artifacts etc.

KESNIK organised 49 training programmes were organized through 14 regional centres, benefiting 652 people in masonry, carpentry, production of CEEE (Cost Effective and Energy Efficient) and Green Building Materials and other related areas such as home art, terracotta, landscaping to find self-employment opportunities in the respective field. Out of the total, 570 trainees were women.

The International School of Habitat Studies (LaBISHaS) organized eight training programmes for college students to create better awareness in Cost Effective Eco-Friendly (CEEF) technologies.

Kerala State Co-operative Housing Federation

This agency provides financing facilities to the affiliated primary co-operative housing societies (PCHS) for the construction of houses and repair/extension. In 2016-17, an amount of ₹5,948.47 lakh and in 2017-18 (up to July 31, 2017) an amount of ₹1,795.46 lakh have been disbursed among EWS, LIG, MIG and others for constructing 1361 and 452 housing units respectively. The details of houses assisted and amount disbursed by Kerala State Co-operative Housing Federation is given in **Appendix 4.3.67.**

Other Major Agencies Involved in Construction of Houses

a. Department of Local Self Government- In 2016-17, under various schemes implemented by Kudumbasree 829 houses were constructed and 46,166 houses by Commissionerate of Rural Development. 3,450 houses were constructed under various schemes by Directorate of Urban Affairs and Directorate of Panchayaths.

b. Scheduled Tribes Development Department- General Housing Scheme- This scheme aims to provide financial support to houseless Scheduled Tribes for construction/repair of houses. The amount provided in this scheme is at the rate of ₹3.50 lakh/house for new houses. Total Number of houses assisted so far under the scheme was 2,498.

c. Scheduled Caste Development Department- The Department implements development programme for Vulnerable Communities like Vedan, Nayadiesetc whose annual income should not exceed ₹50,000. The Scheme is to provide an amount of ₹7.25 lakh for the purchase of land and house. In 2016-17, the number of houses constructed by the Department under the scheme was 102.

d. Sainik Welfare Housing Department- The Department Provides house building grant to disabled servicemen before completion of terms of engagement, recruits, war widows and widows of Jawans who died in harness. The beneficiaries' annual income limit is ₹1.5 lakh and the present rate of grant is ₹1 lakh. The income limit is not applicable to the war widows and war disabled Ex-servicemen. In 2016-17 (up to March 31, 2017) assistance was provided to one household under the scheme. (Source: Housing Commissionerate, Thiruvananthapuram.)

4.4 OTHER SERVICES

ART AND CULTURE

Kerala is well known for its rich heritage of art and culture. The State is aiming to make culture one of the major driving forces of the economy. There is an increasing demand in the State for cultural products and the State should take effective measures to meet this rising demand. Kerala at present has got great opportunities to promote its culture in an extensive way.

The Thirteenth Five-Year Plan recognises art and culture as a sunrise sector that would propel economic growth and development of the regional economy of Kerala. During the Plan, the State Government would promote its rich and diverse culture and will give specific focus to integrated cultural planning, encompassing art and heritage planning. The allocation of resources for cultural activities will be enhanced. Research on Kerala's historical and cultural heritage will be promoted.

The Approach for Thirteenth Five-Year Plan on Art and Culture Sector emphasises a public policy on art and culture that should facilitate the evolution of a modern, secular and democratic society. Such a policy represents continuity with the legacy of Kerala's cultural renaissance. It should be a progressive response to the contemporary challenges arising from majoritarianism and revivalism. There are numerous institutional features of Kerala's cultural history that need consolidation. Village libraries and reading rooms, cultural societies, film societies, local oral history projects and popular art forms with secular messages have to be strengthened, utilising the potential of emerging technologies and new social media.

There are many institutions in the State working for the promotion and propagation of this cultural

heritage. They include academic, performing and promoting institutions. Financial assistance to the sector is mainly provided through Cultural Affairs Department. Major implementing departments coming under the sector are Department of Archaeology, Department of Archives, Directorate of Culture, Department of Museum and Zoos, and Kerala State Film Development Corporation. Major institutions coming under the Department of Cultural Affairs are Kerala State Chalachitra Academy, Kerala Folklore Academy, Kerala Sahitya Academy, Kerala Sangeetha Nataka Academy, Kerala Lalitha Kala Academy, Bharath Bhavan, Kumaranasan National Institute of Culture, Vasthuvidya Gurukulam, Kerala Kalamandalam, Vylloppilli Samskrithi Bhavan, Gurugopinath Natana Gramam, Jawahar Balabhavan, State Institute of Languages, and Kerala Book Marketing Society. Lack of co-ordination and monitoring and evaluation of the activities of these institutions is an important limitation of the sector. Therefore it is proposed to form an apex body for the co-ordination of the institutions.

A brief description of major achievements of some of the departments coming under the art and culture sector in 2017-18 is given below.

Archaeology Department

One of the major achievements of the department is the establishment of District Heritage Museums. Work on District Heritage Museums is progressing in the districts of Thiruvananthapuram, Kozhikkode, Pathanamthitta and Idukki. The Department constructed an eco-park and renovated the children's park at Madavoorpara. It also conducted urgent renovation works at Hill Palace Museum Thrippunithura, Sreepadam

Palace, Padmanabhapuram Palace, Kottarakkara Thampuran Palace, Kilimanoor Palace and Puthupally Vennimala Sree Rama Iekshmana Temple. The department conducted various exhibitions and seminars, scientific excavations at Poovambayi at Kozhikode, Neyyattinkkara, Thrissur, Kollamkkode Palace and Mulayam. The Department organised Kerala Telengana Heritage Fest 2017 at Hyderabad from February 26 to 28 to create cultural awareness among the Non Resident Keralites.

Archives Department

Archives Department is the custodian of all non-current records of permanent value of the State Government and various departments, institutions and individuals. As the custodian of valuable records of historical value like Government records, palm leaf, manuscripts, etc the Department conserves such documents and protects them scientifically for reference purpose. In 2017-18 the department achieved the following major programmes.

- Community archives programme was undertaken with the participation of public under which department can conserve and preserve many private records. Administrative sanction of an amount of ₹50 lakh has been obtained and initial works have started.
- For the creation of heritage awareness among non-resident Keralites, department organised archival exhibitions, seminars, awareness programmes at Hyderabad from February 25 to 27, 2017.
- Started the work for development of an interactive online archives website for making the digital records and services of the department available to the research students, historians, teachers and public.
- Publication works of one of the selected record of the department named “Charithra Reshmikal” is in final stage. Steps initiated for the reprints of the “Perumbadappu Grandhavari”, “Selected documents on

Vaikkom Sathyagraha”, and “Pracheena Lipi Mathrikakal”.

- Department transliterated 46,718 palm leaves, digitised six lakh paper records and two lakh churuna leaves through C-Dit.

Directorate of Museums and Zoos

The Department of Museums and Zoos is functioning under the administrative control of the Cultural Affairs Department. It has its Head Office, Museums and Galleries, as well as Zoological Park in Thiruvananthapuram City and Art Gallery and Krishna Menon Museum at Kozhikode. These institutions are functioning as major centres of attraction of tourists. Major achievements of the Department in 2017-18 are following.

- Renovation works of natural history museum by providing air conditioning unit and standardisation of electrical installation are progressing; renovated canteen at State museum and zoo, Thrissur and carried out urgent maintenance works in the old garden office.
- All modern museums are being reworked as barrier free museums so that differently abled people too can explore the museum. As a first step, department has decided to install lift facilities in various museums functioning under this department.
- Thiruvananthapuram and Thrissur zoos attract a large number of visitors from all over India and other countries throughout the year. The number of visitors has been increasing year by year. The zoo has been provided with various visitor amenities such as drinking water points, toilets, vehicle parking area, wheel chairs, battery operated vehicles, souvenir shop etc. In the current year the department has further enhanced the visitor facilities by installing additional e-toilets, she-toilets and special toilets for differently abled people.
- The aquarium in the museum and zoo campus, Thiruvananthapuram is a great attraction among visitors. Hence department is aiming to construct a state-of-art aquarium

in the campus of State Museum and Zoo, Thrissur also. There is adequate land available for the purpose.

- Wildlife Week Celebration is an annual event of the department. Various competitions like quiz, painting, elocution, essay writing were conducted for school and college students.

Directorate of Culture

During 2016-17, up to March, Directorate provided financial assistance to about 21 cultural institutions including cultural memorials like Thunjansmarakam, Unnai Warriar Smarakam under Plan and non-Plan fund. New schemes of the Directorate are Diamond Jubilee Fellowship for young artists, development and networking of Museums, livelihood for artists/rural art hubs, apex body for culture. The two ongoing schemes are non-recurring grant to cultural institutions and diffusion of Kerala Culture. Under the scheme, "Diffusion of Kerala Culture," culture directorate has created a website named www.keralaculture.org and updated it with videos of cultural festivals and various cultural aspects of Kerala. The department organized a cultural exchange programme named Heritage Fest at New Delhi from October 14 to 16, 2017 in association with Bharath Bhavan, Archaeology Department and Archives Department.

Kerala State Film Development Corporation (KSFDC)

In 2017-18, KSFDC has commenced the modernisation and bifurcation of Chitranjali theatre at Chittur. Bifurcation and renovation works at Chitranjali Theatre started in August 2017 and theatre will be opened in December 2017. Government has selected KSFDC as a special purpose vehicle for the implementation of four major projects like, construction of cultural complexes in all districts of Kerala under the Cultural Affairs Department, conversion of Chitranjali Studio, Thiruvananthapuram into a Film

City, construction of a multipurpose film festival complex at Chitranjali Studio Thiruvananthapuram for the Kerala State Chalachitra Academy and construction of 100 theatres all over Kerala with the assistance from Kerala Infrastructure Investment Fund Board (KIIFB). The tendering process for selection of agencies who would prepare the DPR is at the final stage.

Vasthuidhya Gurukulam

Vasthuidhya Gurukulam is the only institution in India to promote and preserve traditional architecture and other related subjects under Government Sector. Ministry of Human Resource Development, Government of India has approved VasthuidhyaGurukulam as national nodal agency for vasthu and other related subjects. Procedures are going on to upgrade Vasthuidhya Gurukulam as a national institute. Vasthuidhya Gurukulam is conducting five academic courses in Vasthuidhya and mural painting. The total student strength of Vasthu Vidhya Gurukulam is 250. Government of India and United Nations Development Programme selected Aranmula village as a focal point to implement their tourism projects. In India, 31 villages have been selected and Aranmula is one among the prominent cultural heritage villages selected. Gurukulam is the implementing agency for this project. Vasthuidhya Gurukulam is documenting all the traditional architectural buildings of Kerala for Department of Tourism. It prepared heritage Plan for Alappuzha and Thalasseri for State Town Planning Department. Gurukulam has documented selected 50 important architectural structures in South India. Mural painting renovation works at Kerala Kalamadalam and S.D College Alappuzha were completed.

State Institute of Encyclopaedic Publications

In 2017-18, State Institute of Encyclopaedia published the 10th volume of the Viswa Sahitya Vijnanakosam. Works for the preparation of volume 17 of the General Encyclopaedia is

progressing. The institute has also initiated the works for the publication of Navasankethika Vidhya Vijnanakosam and Kerala Vijnanakosam.

Kerala Sahitya Academy

Kerala Sahitya Academy is an autonomous institution established for the promotion and development of Malayalam language and literature. As part of its diamond jubilee celebrations, the Academy organised a symposium with the participation of eminent writers from Telugu, Kannada, Tamil, Konkani and Malayalam languages on November 2016. The Academy conducted State Level Vidhyarangam Sargolsavam from 27th to 30th December, 2016 for students. On January 2017 Academy organised a four days Workshop on South Indian Poetry translation in which eminent poets from South Indian languages participated. As part of International Theatre Festival, five days workshop on drama writing was also organised.

Kerala Sangeetha Nataka Academy

The Kerala Sangeetha Nataka Academy was established for the conservation and promotion of the cultural heritage of the State related to music, dance, drama, Kathakali and folk arts. Sangeetha Nataka Academy organised “Nadya Kairali”, and Kathakali festival in association with Chembai Memorial Music college from October 30 to November 5, 2016. In this festival, eminent Kathakali artist’s Kathakali and seminars were presented. Shadkala Govinda Marar music festival was organised from November 4 to 6, 2016 at Ernakulam district. “Sruthi Panchamam” Swaravadyothsavam was organised from February 5 to 8, 2017 at CMS college. The 9th International Theatre Festival of Kerala (ITFoK) was organised in Thrissur from February 20 to 28, 2017. 15 international dramas, 8 national dramas and 7 Malayalam dramas were presented in the 9 days programme.

Kerala Lalithakala Academy

The Kerala Lalithakala Academy conducts programmes for promoting the talent of artists

especially painters and sculptors. It gives assistance to artists for organizing exhibitions and provide scholarships to students of fine arts. As part of Pavayil Fest 2017, Academy organised one day painting camp at Pavayil, Kozhikkode. About 50 artists participated in it. The Academy organised National Cartoon camp from May 4 to 6, 2017 and 10 days art and cultural programme named “Samanwaya” from July 14 to 23 at Darbar hall Kalakendra, Ernakulam. 250 artists including 40 transgenders and 18 tribal artists participated in it. Academy aims to organise painting camps and sculpture making in government schools to attract students to this art

Kerala State Chalachitra Academy

The Kerala State Chalachitra Academy was established in 1998 to promote good cinema in Malayalam. The Academy helps Government in formulating policies regarding Cinema and TV. Mainly three film festivals viz, International Film Festival of Kerala, National Film Festival of Kerala, International Documentary and Short Film Festival of Kerala are organised by Kerala State Chalachitra Academy. Academy organised National Film Festival from March 18 to 21, 2017 at Kodungalloor, in which 21 (national award) films were exhibited. Academy organises touring talkies (mobile film shows) in association with film societies, schools, colleges, cultural association etc. Chalachitra Academy in association with Federation of Film Society of India organised first Women’s International Film festival at Kozhikkode Tagore Theatre from March 6 to 10, 2017. The presence of eminent women personalities in Indian cinema was one of the main attraction of the festival. The 10th International Documentary and Short Film Festival of Kerala was organised from June 16 to 20, 2017 at Thiruvananthapuram. 1500 delegates participated in it and 218 films were exhibited. The initial works have started for the construction of permanent theatre festival complex at Chitranjali studio and International Film Study Research Centre and digital archives at Kinfra Park, Kazhakkuttam.

Guru Gopinath Natana Gramam, Vattiyoorkekavu

The Guru Gopinath Natana Gramam was established as a Centre for learning, training and research in various Indian dance forms. The Institution conducts dance and musical instrument classes for talented children. Seminars on dance forms of Kerala are also conducted regularly. In 2017-18, institution renovated the Chilamboli open theatre. A workshop on international Museum was organised on February 9, 2017. The main objective of this workshop was to prepare a road map for the preparation of National Dance Museum. About 40 museum experts including experts from Austria, Australia participated in the Workshop. The National Dance Festival was organised from February 7 to 12, 2017, in which dance groups from Orissa, Manipur, Karnataka, Tamil Nadu and Kerala participated. Documentation of Kerala Nadanam phase-I completed in January 2017.

State Institute of Children's Literature

The Institute has been publishing and popularizing books and periodicals on children's literature in Malayalam language. The Institute brings out a magazine called "Thaliru" for children. It conducts various programmes to inculcate reading habit among the children and organizes competitions for promoting the literary aptitude of children. Aksharayathra conducted on November 2016 at selected schools is one of the main activity of the Institute. The aim of this scheme is to evoke interest and love for mother tongue and reading habit among children. The scheme provides books at low prices to children. The Institute conducted vacation camp (Sarga Vasantham) in 2017 in 8 districts. Drama, poetry, story, drawing, media, science and environment were the seven subjects in the camps. Through book fairs conducted by Rashtriya Madhyamik Shiksha Abhiyan and Library Council, the Institute sold books worth ₹1 crore.

State Institute of Languages

The State Institute of languages, Kerala an academic publisher was established in 1968 in pursuance of the national policy for the development of regional languages. Up to July 2017, Institute published 4,260 books. The Institute developed a mobile app for officials to use for using Malayalam language in the field of administration. In collaboration with C-DAC, the Institute initiated work for Malayalam computing including spell check, grammar check, production of Malayalam fonts and selling book through e-commerce

Margi

Margi, an institution for teaching 'Kathakali', started in the year 1970 and is a cultural centre for promoting 'Kathakali', 'Koodiyattam' and 'Nangiarkoothu'. The institution functions as a 'Kaliyogam' (training cum performing group). There are 26 artists in the Kathakali Section. Margi gives free training in Kathakali and Chenda to school students on Saturdays and Sundays. Koodiyattom section functions in collaboration with central Sangeetha Nataka Academy. Seminars and classes are conducted for the promotion of Koodiyattom. More than 100 programmes on Kathakali and Koodiyattom were performed within and outside Kerala every year.

Kerala State Library Council

The Kerala State Library Council strives to make an integrated public library system in the State through its various activities. It takes up activities mentioned in the Kerala Public Libraries Act, 1989 and other activities of social importance. Universalisation of library service, facilitation of modern amenities for acquisition of knowledge, improving educational standard of low achieving students, special library service for women, children, aged and prisoners are the main activities of the library council. Kerala State Library council provides its services through model village libraries and academic study centres in 14 districts of Kerala and Jail library service at 15 jails. It envisages to

extend services to 3 more jails, 5 juvenile home libraries, 7 hospital library and 4 orphanages.

Malayalam Mission

Malayalam Mission was started in 2009, with an aim to acquaint the children of Non Resident Keralites with Kerala culture and Malayalam language.

It offers 4 certificate courses of duration of 10 years. The certificate courses are Kanikkonna (2 year), Diploma course, Sooryakanthi (2 year), Higher diploma course, Aambal (3 year) and senior higher diploma, Neelakurinji (3 year). In 2016-17 the Mission started a new study centre in Tamil Nadu besides initiating activities in UK and Kuwait.

WELFARE OF NON-RESIDENT KERALITES

Migration and remittances are twin pillars that supported the sustenance of the much acclaimed “Kerala Model” of development. External migration has become an all pervasive phenomenon in the economic and social life of the State and is affecting every facet of life in Kerala. Though migration for employment has been taking place from all corners of India, yet when quality standards such as specialised skills, amenability to changing work environments, adaptability with progress of sophistication and mastering latest technology etc. are taken into account, Keralites are considered to have an advantage. This is the primary reason why the footprint of Keralites is visible not just in Gulf countries, but all over the globe. International migration contributes to the development of countries that migrant destinations as well as the

countries of migrants’ origin. The contribution of migration to development can be seen at family level, community level and country level. As per the 6th Kerala Migration Survey (KMS) 2014, the number of non-resident Keralites (NRK), that is, Kerala residents who have ever lived outside India, are estimated to be ₹36.5 lakh. The number has increased from ₹34.3 lakh in 2011 and ₹33.5 lakh in 2008. The number of emigrants for the same period was ₹24 lakh up from ₹22.8 lakh in 2011 and ₹21.9 lakh in 2008. These numbers entail a systematic growth in emigration from Kerala. The number of return emigrants (REM) according to the same survey was ₹12.52 lakh, up from ₹11.5 lakh in 2011 and ₹11.6 lakh in 2008. It is observed that many workers who returned did not get any opportunity to have their newly acquired skill and

Box 4.4.1

Approach to the 13th Five-Year Plan

- The State Government has expressed its resolve to strengthen its engagement with the diaspora of Keralites spread across the world. Remittances from migrant workers have contributed to the mobilisation of savings and to the overall economic growth of the State. In fact, the incomes from remittances have created demand for a range of material and cultural goods produced in Kerala. The close ties that migrants maintain with their families and friends in Kerala have benefited the State in many ways, including by helping new generations of Keralites to find employment outside the State. Considering the facts a special focus will be given to the welfare of NRKs in the 13th Five-Year Plan.
- Migrants form part of a larger Kerala society. They participate actively in multiple spheres of Kerala’s economy, society and culture (including literature, music, cinema, and religious events). Given such a context, it is important that the members of diaspora are given an opportunity to participate in debates and social processes in the State.

- Periodic migration surveys and the creation of an online real time database of NRKs are high on the list of priorities. At the same time, the State will work with the Central government to formulate an enlightened emigration policy. The 13th Plan will support steps to provide legal aid to the needy among the migrants, impart finishing skills to potential migrants through pre-emigration training, ensure speedy authentication of relevant certificates, and regulate the activities of intermediaries and service providers (such as airline companies). The State will design insurance and social security programmes to benefit the migrants, and evolve a comprehensive rehabilitation programme for migrant returnees.
- At the same time, the 13th Plan will aim to promote entrepreneurship by NRKs and also seek investments by them in Kerala. Kerala will welcome a “reverse brain drain” and transfer of knowledge, technology and expertise to the State through its migrants. The State will promote business and cultural visits to and from Kerala by teams involving NRKs. The Plan will support global cultural festivals involving non-resident Keralites.
- Another policy priority will be to form a non-profit trust namely the Kerala Development Fund (similar to the India Development Fund) to raise funds from any NRK individual or organization. This will help to channel investments by the migrants into the development of productive areas within Kerala.
- China’s experience with overseas Chinese has shown that when the home territory has a government that has credibility and in which non-residents have confidence, material and moral incentives can be mobilised among the overseas population to invest and stimulate economic development. We believe that we have a Government with that credibility in Kerala today.

work experience formally acknowledged. This situation adversely affects on their employability and labour market outcomes in the State. A mechanism for assessing the skill of the return migrant will make it easier to reintegrate them into the labour market or to become self employed.

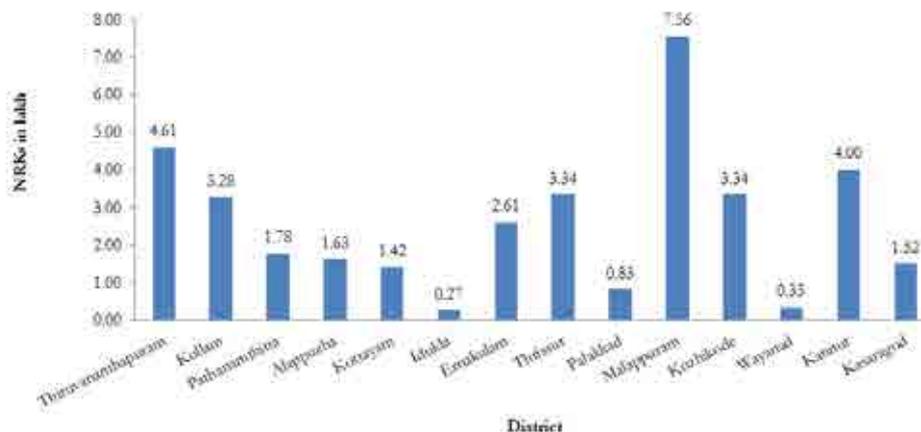
District-Wise Non-Resident Keralites

Malappuram ranks first among Kerala residents who have ever lived outside India with a total population

of 7.56 lakh in 2014. Thiruvananthapuram (4.61 lakh) and Kannur (4 lakh) are the second and third highest NRK populated districts in the State. District wise status of NRKs are given in **Figure 4.4.1**.

During 2011 to 2014, the increase in Non Resident Keralites is 2.22 lakh. The highest increase was in Malappuram (1.93 lakh), followed by Pathanamthitta (0.71 lakh) and Ernakulam (0.62 lakh). District-wise increase and decrease of NRKs in the State is given in **Figure 4.4.2**. Details

Figure 4.4.1
District-wise Status of NRK



Source: Kerala Migration Survey, 2014, State Planning Board, GOK

of NRKs over the period across the State are given in **Appendix 4.4.1**.

Emigration from Kerala

The flow of emigrants from Kerala to other parts of the world has been declining over the years. As compared to the period 1998-03, the additional emigrants from Kerala has reduced from 4.77 lakh to 1.19 lakh during 2011-14. District wise emigrants from Kerala during different periods are given in **Figure 4.4.3**. The details of district wise number of emigrants from Kerala are given in **Appendix 4.4.2**.

District-Wise Proportion of Emigrants in Kerala

In Malappuram, Kannur and Kasargod districts, the proportion of emigrants to total emigrants from the State increased in 2014 compared to 2008. Malappuram has the highest proportion of emigrants (19.1 per cent) followed by Kannur (12 per cent). In Thiruvananthapuram, Palakkad and Thrissur districts, the proportions of emigrants have declined. Highest decline was in Palakkad from 9 per cent to 3 per cent. District-wise

proportion of emigrants from Kerala is given in **Figure 4.4.4**.

Return Emigrants

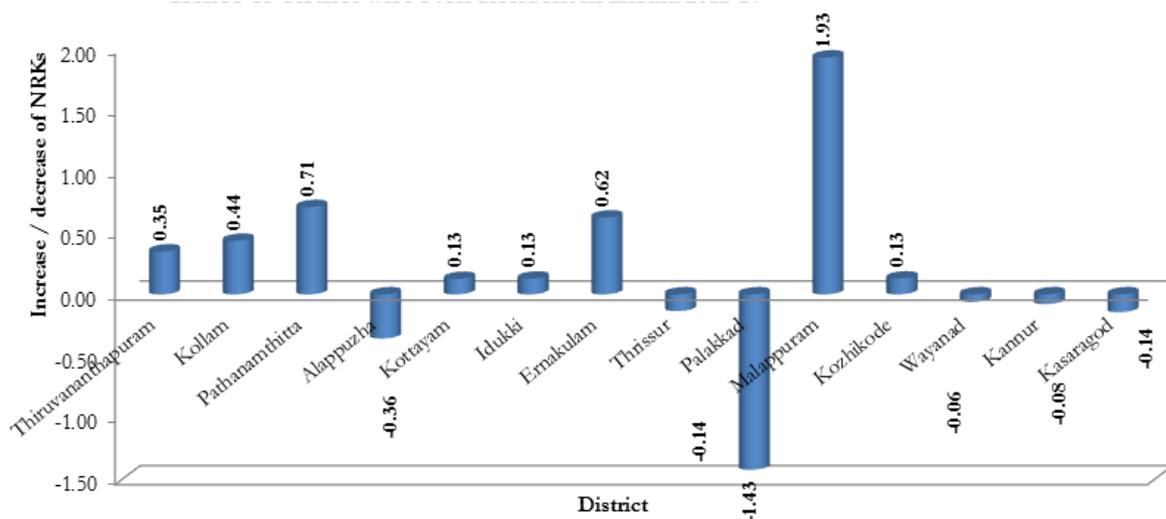
Due to the nationalisation policy of Middle East and subdued economic growth all over the world, the number of return emigrants to Kerala is increasing. Total return emigrants increased from 7.3 lakh in 1998 to 12.5 lakh in 2014. **Figure 4.4.5** shows the increasing trend of return migrants to Kerala.

The highest return emigrants is seen in Malappuram followed by Thiruvananthapuram and Kottayam. The district-wise trend of return migrant to the State is given in **Figure 4.4.6**. The details of the return migrants during different periods are given in **Appendix 4.4.3**.

Destination of Emigrants of Kerala

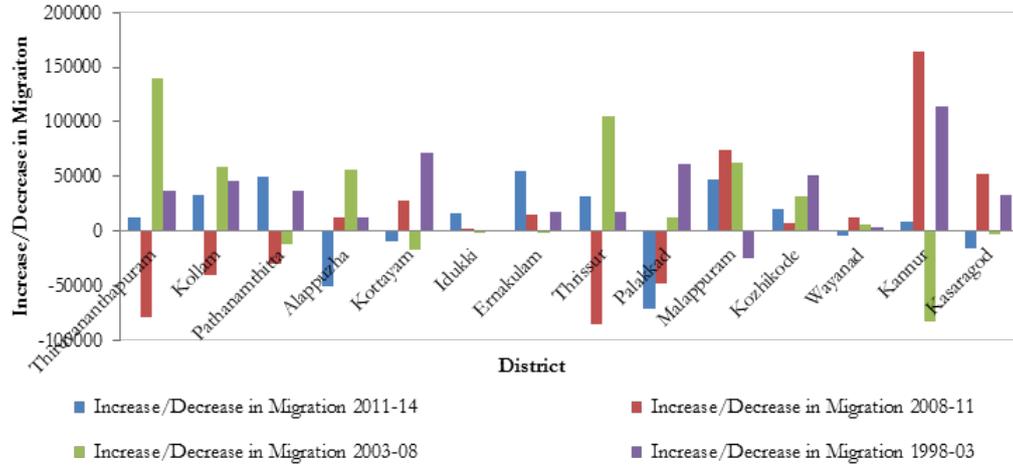
Country wise destination of emigrants from Kerala shows that 37.5 per cent are in UAE and 21.8 per cent in Saudi Arabia. Out of the total emigrants, 86.3 per cent are residing in West Asia. Emigrants residing in UK, Canada and other

Figure 4.4.2
District-wise trend of Non-Resident in Kerala 2011-14



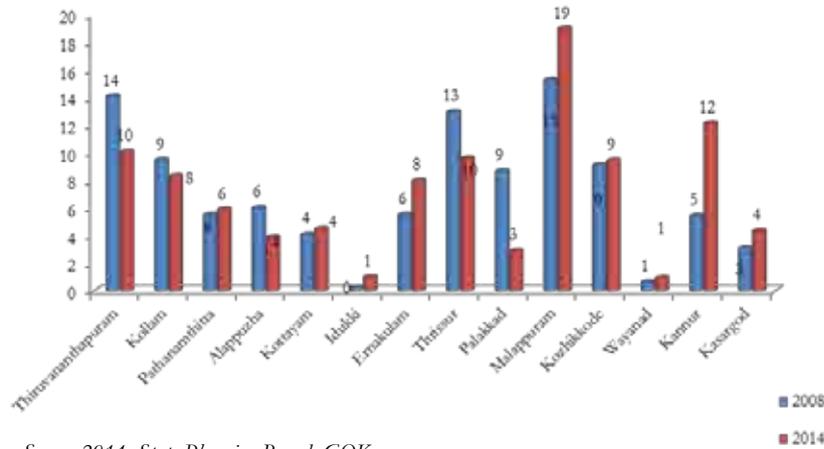
Source: Kerala Migration Survey, 2014, State Planning Board, GOK

Figure 4.4.3
District-wise Emigrants from Kerala



Source: Kerala Migration Survey, 2014, State Planning Board, GOK

Figure 4.4.4
District-wise Proportion of Emigrants from Kerala



Source: Kerala Migration Survey, 2014, State Planning Board, GOK

Figure 4.4.5
Number of Return Emigrants in Kerala

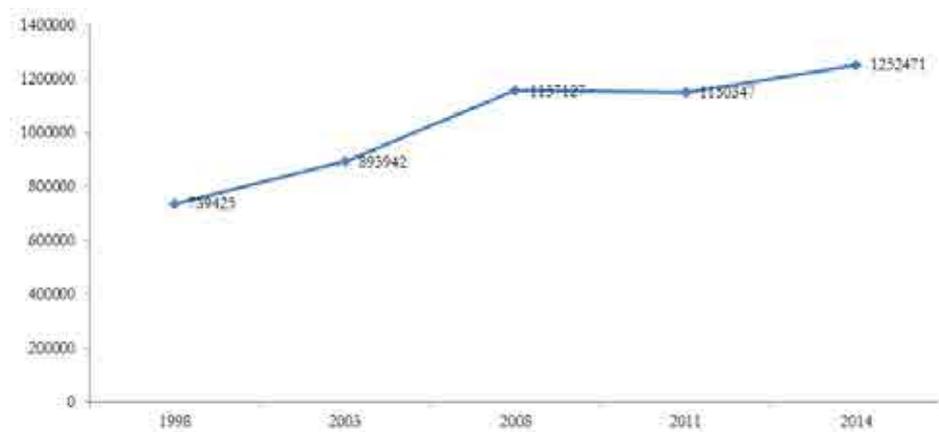
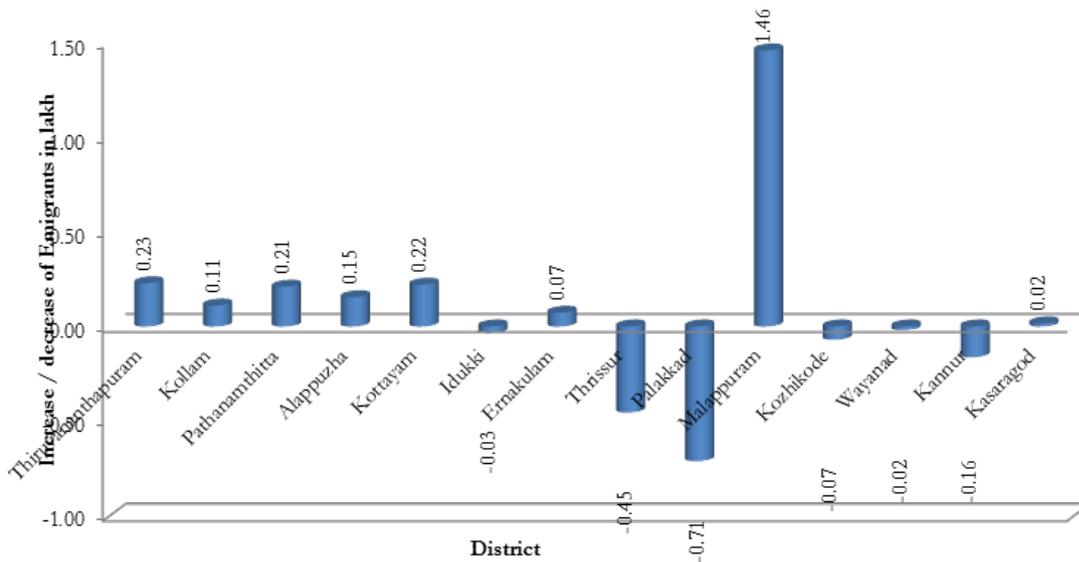


Figure 4.4.6
District-wise Trend of Return Migrants to Kerala



Source: Kerala Migration Survey, 2014, State Planning Board, GOK

South East Asian countries are increasing over the years. Country wise destination of total emigrants from Kerala for the period 2008 and 2014 is given in **Figure 4.4.7**.

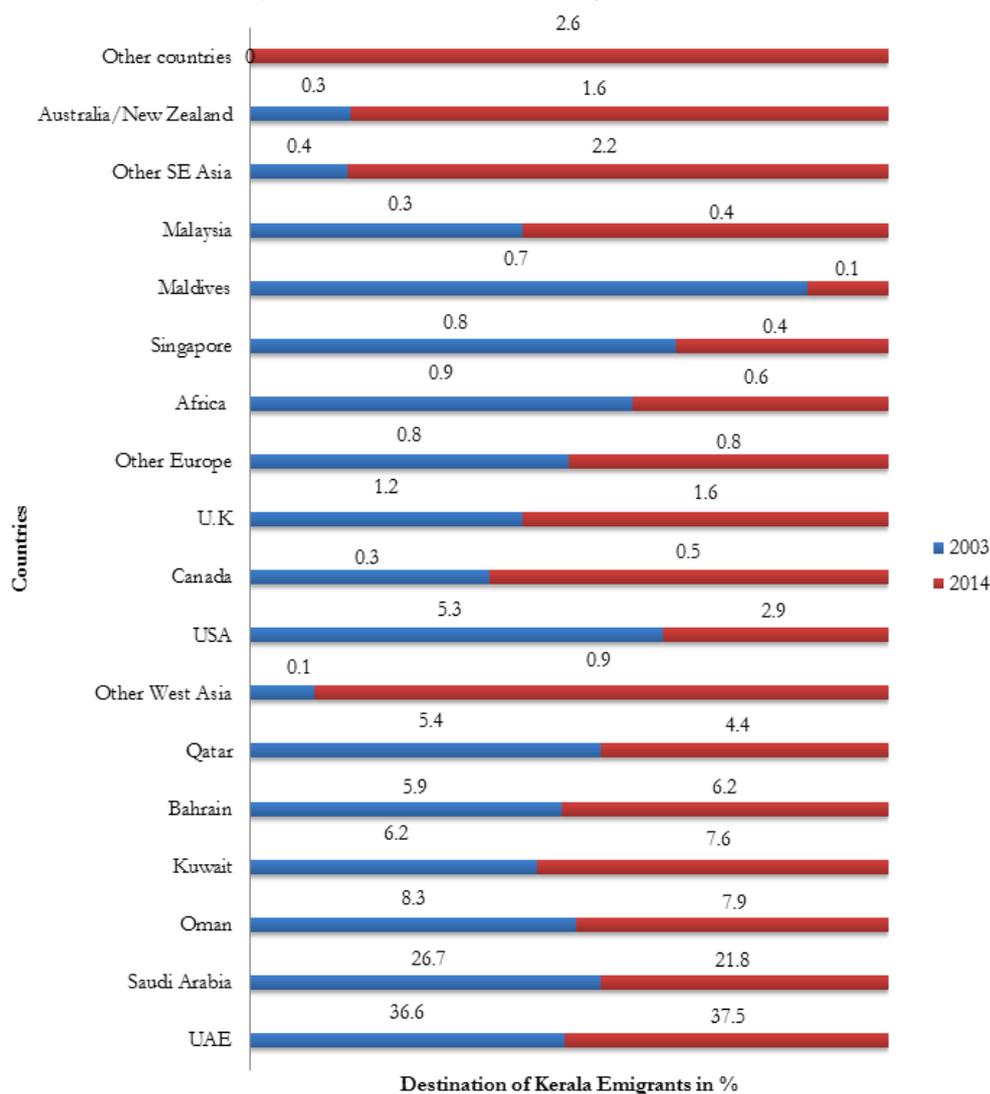
Profession-Wise NRKs

In recent years, the pattern of emigration has changed in respect of the profession they seek abroad. In the 1970s, the proportion of skilled workforce in the total emigrants was very small. Now larger number of skilled workforce from different professions such as doctors, nurses, engineers, IT professionals, teachers, etc. seek employment outside the country. Distribution of NRKs by profession showed that 11.85 per cent of them are working as drivers, 10.99 per cent as salesmen, 6.37 per cent as nurses, 3.78 per cent as engineers, 2.23 per cent as IT professionals and 0.53 per cent as doctors and the remaining 67.78 per cent are professionals like businessman, teachers, bank professional, etc.

Among the doctors, the highest share is from Thiruvananthapuram at 14.39 per cent followed by Kottayam and Ernakulam at 14.38 per cent and 14.34 per cent respectively. The lowest share is from Wayanad. In case of nurses, the highest proportion is from Kottayam at 23.73 per cent followed by Pathanamthitta (20.75 per cent) and Ernakulam (18.16 per cent). For Engineers, Ernakulam has the highest proportion of 13.47 per cent, followed by Thrissur (13.23 per cent) and then Kottayam (10.11 per cent). Among teachers, Pathanamthitta has the highest share of 16.69 per cent followed by Alappuzha at 15.99 per cent and then Kottayam at 9.74 per cent. **Figure 4.4.8** shows the district wise number of NRKs working in different jobs abroad.

The State Government recognizes the vital role of Non-Resident Keralites in the socio, economic, political, cultural development of the State and is prepared to work towards addressing all the concerns and issues of NRKs through an innovative approach in the coming five years.

Figure 4.4.7
Country-wise Destination of Emigrants from Kerala



Source: Kerala Migration Survey, 2014, State Planning Board, GOK

Box 4.4.2
Major Initiatives Proposed in the 13th Five-Year Plan

- Sector of migration would be constantly subjected to detailed analysis for assessing opportunities for gainful employment.
- Labour and Employment opportunities in developed economies and newly emerging markets would be mapped for focussed access to such avenues. Short to medium term deployment of highly skilled and highly remunerated professionals in developed countries would be emphasised.

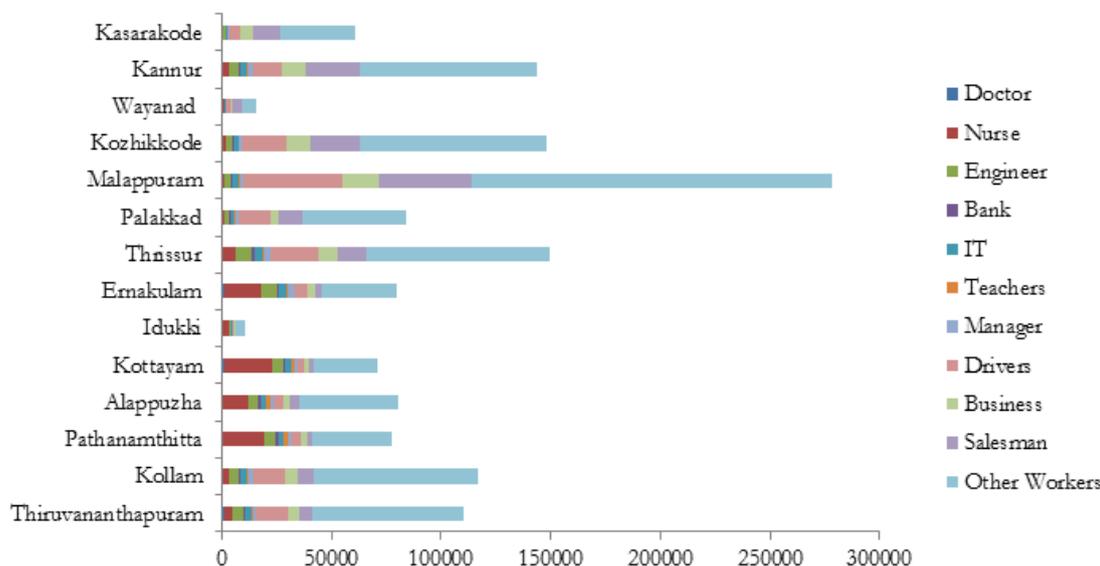
- Skilling would be elevated to international standards ensuring due certification from accredited agencies of repute so that Keralites can ensure their footprint in developmental sectors throughout the globe.
- Customised and expert level training would be given to chosen candidates after ascertaining specific requirements of major international organisations with assurance for deployment in such organisations.
- More concerted efforts would be taken in association with key stakeholders for revamping the rehabilitation package for returned non resident Keralites.
- Recruitment division would be strengthened and it would be transformed into such a dynamic division that reputed employers around the globe choose NORKA ROOTS for its staffing requirements.
- Detailed and specific qualifications and experience of employees shall be provided. An expert agency's assistance will be obtained in verifying the credentials of employees to ensure their correctness.
- Pre-departure training and orientation would be modernised to reflect latest aspects of safe migration. Intensive awareness campaigns would be exercised to make migration a gainful one.
- Online data base of NRKs would be constructed and maintained as a permanent platform so as to dynamically reflect their status and other vital information.
- Institute of migration studies for high level research and study on all issues related to migration and allied subjects.
- For interaction between the State and NRKs, Loka Kerala Sabha will be formed with members of the State Legislative Assembly and representative of NRKs nominated by the State Government in proportion of population of NRKs in host countries/regions.
- Global Kerala Cultural Festival involving NRKs need to be promoted whereby NRKs can be invited to participate in cultural activities of the State as well as share the art and culture of the country, region and State they are presently residing.
- Awareness Campaign on visa cheating would be priority. Strategies as to periodicity, frequency and mode of advertisement will be devised after detailed study of individual programme.

Source: Economic and Statistics Department, GOK.

Box 4.4.3 Loka Kerala Sabha

Recognition of the diaspora is very crucial and one of the effective ways is to provide a forum for representation where they can associate and link to their home State. Considering the importance of the interaction between State and NRKs, the Loka Kerala Sabha will be formed with members of the State Legislative Assembly and representatives of NRKs nominated by the State Government in proportion to the percentage of population of NRKs in host countries/regions. This Sabha will discuss and deliberate on issues related to NRKs and will help in forging a link between Kerala existing within and outside the State. This Sabha, which will meet at least twice in a year, will be advisory in nature and will provide a forum to voice the concerns of NRKs and also contribute towards policy formulation.

Figure 4.4.8
District-Wise NRKs Working in Different Jobs



Source: Economic and Statistics Department, GOK.

Box 4.4.4

Glimpse of Plan Schemes, Services and Own Project Offered by Norka Roots

Rehabilitation of Return Migrants

The aim of the scheme is to reintegrate returned emigrants by helping them to find suitable employment/self employment as a step towards their rehabilitation. Government has formulated Norka Department Project for Return Emigrants (NDPREM) to develop a sustainable business model. The project envisages providing a capital subsidy of 15 per cent of the total project cost as a backend subsidy and 3 per cent of interest subvention to eligible entrepreneurs among return emigrants who wish to start their own ventures in the field of agri-business, training, services and manufacturing.

Santhwana: This scheme is for providing financial assistance to NRKs (returnees) whose minimum period of service abroad is of two years and the period after return does not exceed 10 years. For medical assistance ₹50,000 is provided and a maximum ₹100,000 is provided as death assistance. Marriage assistance is ₹15,000 and for wheel chair crèches and artificial limbs, ₹10,000 is provided as assistance. There are 2,700 NRKs who have benefitted from the scheme in 2015-16 and 2016-17.

Swapna Saphalyam: The lower segments of Non-Resident Keralites working abroad especially in Gulf countries are subjected to various miseries due to lack of labour protection rules. It is estimated that 1,200 Indians are jailed in Saudi Arabia alone, of which 50 per cent being NRKs. The scheme is to address those NRKs jailed abroad for no wilful default on their part and aims to provide free air tickets when they are released from jails and are not able to afford the tickets.

Pravasi Legal Assistance (Pravasi Legal Aid Cell): One of the major problems faced by the migrant workers from Kerala to the Middle East Countries is the court cases and other legal problems they get into. In the absence of any sort of legal help, the poor workers end up in the jail. This happens even in the cases of minor offence or sometimes where no offence has been committed. Government proposes to extend legal assistance, including appearance in courts abroad, through the Indian Diplomatic Missions or through advocates empaneled by the Indian Mission.

24 Hours Help Line/Call Centres: The scheme intends to disseminate information on various schemes/projects implemented by Government and NORKA ROOTS, redress grievances of NRKs, conduct counselling to NRKs who are in distress, create awareness among emigrants and prospective emigrants against illegal exploitation, migration etc. and to act as a frontline service facilitator/one point client interaction point for NRKs. It also aims to provide need-based information and assistance to emigrants through the proposed helpline.

Pre Departure Orientation Programme: There is lack of awareness among people in matters connected with emigration in general and overseas job in particular. The scheme is intended to impart orientation and training to these prospective emigrants before departing to their destination countries so as to ensure legal migration. The widespread rural penetration of this scheme will limit cases of illegal migration and exploitation by unscrupulous recruiting agents.

5
CHAPTER

INFRASTRUCTURE



INFRASTRUCTURE

Infrastructure is a key driver of the overall development of the economy. This chapter focuses on major infrastructure sectors such as road, road transport, water transport, ports, energy, urban infrastructure, communication and sports. The changing infrastructure landscape in the State has generated significant interest from external investors. The chapter deals with various Government plans, programmes and policies aimed at improving the overall State infrastructure. Infrastructure is to be created through the Plan and by means of the Kerala Infrastructure Investment Fund Board (KIIFB), an important innovative institution. KIIFB seeks to raise funds for pro-people public investment, concentrating on projects that are important for equitable growth. The recent thrust and focus on infrastructure needs to be continued with vigour in order to stimulate economic growth and social prosperity, in Kerala.

TRANSPORT

Transport plays a significant role in the economic development of any region. India has an extensive road network, which provides mobility to millions of people every day. It has the third largest road network in the world stretching 4.88 million km in length. According to the World Bank, National Highways in India account for 92,851 km, which constitute mere 2 per cent of the total road network, but carry about 40 per cent of the total road traffic in India. Only 24 per cent of the total national highways network has four-lane carriage way and the rest are of single-lane or two-lane standards. Indian Railways is the second largest in the world under single management (66,687 km of route length). Freight accounts for 67 per cent of total revenue of Railway. Civil aviation is gradually

gaining importance in passenger movement with an increase in private participation of operating airlines and gradual improvements in airport infrastructure.

Other transport modes like inland waterways and coastal shipping are used for freight transport. With a coastline of 7,512 km, India has 12 major ports and 200 minor ports, of which only 30 ports handle cargo traffic. The total traffic carried by both major and non major ports in recent years was estimated to be 53 million tonnes. However, in terms of domestic freight movement, coastal shipping and inland water transport meet only about one per cent of the total freight traffic demand.

Transport infrastructure of the State consists of 2.19 lakh km of road, 1,588 km of railways, 1687 km of inland waterways and 18 ports. Roads play a prominent role in public transportation over other modes of transportation owing to the geographic peculiarities of Kerala and its widely scattered habitation with a comparatively lesser rural urban divide and limited geographical area of 38,863 sq. km. Kerala has a total fleet of 25,449 buses; of which 19,496 are private buses (77 per cent) and 5,953 are KSRTC buses (23 per cent). Private buses dominate transport in all districts of Kerala except Thiruvananthapuram. The State has a rail network of 1,257 km route length with a total track length of 1,588 km, operating under the control of Palakkad and Thiruvananthapuram Railway Divisions. In Kerala, there are many water bodies, including rivers, lakes, estuaries, backwaters etc. These provide a basis for the inland water transport system which has a length of 1,895 km. Transportation by IWT is considered an efficient economic and environment-friendly means of transportation. Transportation by coastal shipping is appropriate for bulk and long-haul traffic. Kerala has the advantage of a 585 km coast line. Bulk cargo can be transported from multi-modal transshipment points along the coastline.

Kerala has one major port at Cochin and 17 minor ports. Out of the 17 minor ports in Kerala, four are considered intermediate ports viz, Vizhinjam, Beypore, Azhikkal and Kollam based on berthing, cargo handling, and storage facilities available in them. Kerala has three international airports viz, Thiruvananthapuram, Kochi and Kozhikode. All civilian airports functioning in the State are international airports, a feature unique to Kerala. Upon completion of Kannur International airport, Kerala will join Tamil Nadu as the State with the most number of international airports. Realising the advantages of mass transport system in meeting the intra city commuter needs of major cities, Government of Kerala has embarked on Metro Rail Project for Kochi and Light Metro Project for Thiruvananthapuram and Kozhikode cities. With the commissioning of MRTS, major urban corridors are expected to be decongested in

these cities.

Roads are maintained by various agencies in Kerala. These include Local Self Governments, the Public Works Department (Roads and Bridges) and National Highways, Municipalities, Corporations, Irrigation, Forests, Railways, etc. Other agencies dealing with the transport sector are the National Transportation Planning and Research Centre (NATPAC), the Motor Vehicles Department, Kerala State Road Transport Corporation (KSRTC), Roads and Bridges Development Corporation of Kerala (RBDCK), Kerala State Transport Project (KSIP), Kerala Road Fund Board (KRFB) and Road Infrastructure Company Kerala (RICK) Ltd.

The outlay and expenditure in the Transport sector during Twelfth Five-Year Plan and Annual Plan 2017-18 is given in the **Table 5.1**

Financial Performance of 12th Five-Year Plan

The total outlay of 12th Five-Year Plan for the State was ₹102,000 crore of which transport sector share was ₹8,540.00 crore. This is only 8.37 per cent of the total outlay, which means a decline in the share compared to the 11th Five-Year Plan share of 9.8 per cent. But during the 12th Five-Year Plan period, major transport infrastructure projects were shifted to a new head “Major Infrastructural Development Project” by which the sector specific share went down. An amount of ₹438,942.00 lakh was provided as outlay of 12th Five-Year Plan for Roads and Bridges sector and the expenditure reported during that period was ₹980,699.51 lakh (223.42 per cent). An amount of ₹40,093.00 lakh was provided as outlay for Road Transport sector and the expenditure reported during that period was ₹27,275.62 lakh (68.03 per cent).

Roads and Bridges Sector

An analysis of expenditure shows that major share of expenditure incurred was for the development

Table 5.1
Outlay and Expenditure in the Transport Sector in the
Twelfth Five-Year Plan and Annual Plan 2017-18

Sl No	Sub Sectors	Twelfth Five-Year Plan		Annual Plan 2017-18	
		Outlay	Expenditure	Outlay	Expenditure as on 09/17
1	Port Dept	121,627.00	78,063.12 (64.18%)	13,811.00	10,085.25 (73.02%) **
2	Roads and Bridges	43,8942.00	980,699.54 (223.42%)	135,094.00	79,484.39 (58.84%)
3	Road Transport	40,093.00	27,275.62 (68.03%)	8,286.00	3,310.55 (39.95%)
4	Inland Waterways	72,600.00	18,378.68 (25.31%)	16,307.00	263.45 (1.63%)

Source : Budget, State Planning Board

** The expenditure includes the expenditure of ₹10,000 lakh for Vizhinjam International Sea port Ltd (Major Infrastructure Development Project) for which the Outlay is only a token provision of ₹1 lakh.

and improvement of Major District Roads (36.37 per cent), 9.56 per cent for the construction of rural roads and bridges by utilising the NABARD funding and 11.26 per cent for development and up gradation of roads under Kerala Transport Project (KSTP) with World Bank assistance. During the 12th Five-Year Plan period, expenditure was 223.42 per cent of the outlay in the Roads and Bridge sector.

The main reasons for the excess expenditure were:

- Clearance of pending bills of 11th Five-Year Plan in the 12th Five-Year Plan period.
- Spill over of the physical progress of the works to 12th Five-Year Plan period.
- Sanctioning of works in excess of the budget provision.

Table 5.2
Department-wise Outlay and Expenditure of the Transport Sector in the 12th Five-Year Plan
and Annual Plan 2017-18 (₹Lakh)

Sl No	Departments	Twelfth Five-Year Plan		Annual Plan 2017-18	
		Outlay	Expenditure	Outlay	Expenditure as on 09/17
1	PWD (Roads and Bridges)	400,680.00	860,622.13 (214.8%)	125,072.00	76,439.705 (61.11%)
2	PWD (NH)	38,262.00	120,077.41 (313.83%)	10,022.00	3,044.69 (30.38%)
Sub Total : PWD		438,942.00	980,699.54 (223.42%)	135,094.00	79,484.39 (58.84%)
3	Kerala State Road Transport Corporation (KSRTC)	26,165.00	22,065.00 (84.33%)	4,468.00	3,070.00 (68.71%)
4	Motor Vehicles Department	13,928.00	5,210.62 (37.41%)	3,818.00	350.55 (9.18%)
Sub Total : Transport		40,093.00	27,275.62 (68.03%)	8,286.00	3,310.55 (39.95%)

Source : Budget, State Planning Board

The major road network of Kerala, though well connected, faces severe constraints due to the urban sprawl and the haphazard ribbon development all along the routes. The existing traffic levels at most stretches are excessive and beyond the road capacity. The traffic on roads is steadily increasing at a rate of 10 to 11 per cent a year. Capacity augmentation of existing roads is beset with problems relating to limited right of way and land acquisition. The Department-wise outlay and expenditure of the Transport Sector during the 12th Five-Year Plan and Annual Plan 2017-18 is given in the **Table 5.2**.

The major development indicators of transport and communication sector in the State since 2010 are given in **Appendix 5.1**. On the road front, traffic has been growing at a rate of 10 to 11 per cent every year, resulting in excessive pressure on the roads of the State. Total road length in Kerala during 2016-17 is 2,18,942.426 km. This includes classified and non classified roads as stipulated by Indian Road Congress. Road density in the State is 554.35 km/100 sq. km and it is far ahead of the national average of 387 km/100 sq. km. The length of road per lakh population is 655.7 km. Almost 90 per cent of the road network is single lane. The National Highways considered to be the primary network carries 40 per cent of the total

traffic and the State Highways and MDRs – the secondary road network carries another 40 per cent of the road traffic. Thus less than 10 per cent of the road network handles almost 80 per cent of the total traffic. Roads maintained by different agencies of the State are given in **Table 5.3**.

The roads maintained by different Local Self Government Bodies during 2016-17 is 152,777.21 km (69.79 per cent), of which 130,059 km (85.13 per cent) are black topped and 8,498.35 km (5.56 per cent) are cement concrete and of varying standards.

Public Works Department (PWD)

Roads and Bridges wing of PWD is mandated to look after State Highways, Major District Roads etc in the State. PWD roads constitute 15 per cent of the total road network in the State carrying nearly 80 per cent of the road traffic within the State. The total length of roads maintained by PWD (R&B) was 31,812.11 km during 2016-17, of which 4,341.651 km (13.65 per cent) is State Highways and 27,470.46 km (86.35 per cent) is Major District roads. Out of the State highways of 4,341.65 km, only 1,640 km of roads is Standard Double Lane and 2,404 km of roads is Single Lane and the rest is Below Standard Single Lane. Out of the 27,470.46 km of Major District Roads, only 1,310 km are Standard Double Lane and 26,160

Table 5.3
Agency-wise Distribution of State Roads in Kerala in 2016-17

Sl.No	Name of Department	Length (km)	%
1	Panchayats (LSGDs)	152,777.210	69.79
2	PWD (R&B)	31,812.106	14.54
3	Municipalities	18,411.870	8.41
4	Corporations	6,644.000	3.03
5	Forests	4,575.770	2.07
6	Irrigation	2,611.900	1.19
7	PWD (NH)	1,781.570	0.82
8	Others (Railways, KSEB etc)	328.000	0.15
	Total	218,942.426	100

Source: Various Departments

Box 5.1
Major Initiatives of PWD R&B in 2016-17

- Project Preparation Unit has been formed in PWD to take up new major project preparations.
- Road Infrastructure Company Kerala Ltd (RICK) designated for implementing State Road Improvement Project (SRIP) on Annuity mode.
- Government has taken up a new initiative to implement road infrastructure development works using funds from Kerala Infrastructure Investment Fund Board (KIIFB).
- Environment Cell ensures environment management procedures in high value project.
- Development of PRICE software- II phase.
- Quality control units in all Districts - Regional laboratories.
- Use of Waste Plastic, Natural Rubber Modified Bitumen (NRMB) and Coir in road construction.

km are Standard Single Lane. The total length of Double Lane PWD roads is 2,950 km which is only 9.27 per cent of the roads owned by PWD.

Out of the total roads maintained by PWD (31,812.106 km), Kottayam District has the major share with a length of 3,456.214 km (10.86 per cent). Wayanad District has the lowest share with a length of 1,029.314 km (3.24 per cent). Details of district-wise and category-wise length of roads maintained by PWD (R&B) as on March 31, 2017 are given in **Appendix 5.2**.

As on March 31, 2017 there are 1,806 bridges and 51,400 culverts on the PWD roads. Of them, 61 bridges need reconstruction/renovation and 1,557 culverts are not in good condition. Details are given in **Appendices 5.3, 5.4, 5.5 and 5.6**. Major initiatives of PWD (R&B) in 2016-17 are given in **Box 5.1**.

The State PWD is responsible for policy, planning, design, construction and maintenance of the State Highways, Major District Roads and the National Highways on behalf of the NHAI. State PWD performs an extremely vital role in the systemic provision of road infrastructure. However, they need to be reoriented to the current needs with emphasis on private sector participation and implementation of large scale projects through multilateral assistance from agencies like JBIC, World Bank and ADB.

In 2016-17 development and improvement of

1,636 km of State Highways and MDRs has been completed by PWD (R&B). This includes a total length of 951 km of BM&BC surfacing and 1,036 km of normal surfacing. Roads and Bridges wing has completed the works of seven bridges out of the 100 bridges announced in 400 days programme of Government of Kerala in 2014-15. 'PRICE' software has been implemented for preparing estimates and faster online submission to other offices. This is for according Administrative Sanction and Technical Sanction to projects.

National Highways

The National Highway Wing of State PWD is responsible for the upkeep and development of National Highways in the State, mainly with the funds allocated by the GOI. There are Eleven National Highways together constituting 1,781.57 km length in the State, of which 1,339 km (76.6 per cent) are under various stages of development by the National Highways Authority of India (NHAI). Development of the remaining 408 km, which is under the control of the State PWD, is the responsibility of the State Government. The details are presented in **Table 5.4**.

Among the 11 National Highways, the Vallarpadam – Kalamassery NH C (New NH 966 A) is being developed by the National Highway Authority of India (NHAI). Upkeep of the highways, except 176 km, is being done by State PWD with the fund allocated from Ministry of Road Transport

Table 5.4
National Highways in Kerala

Sl. No	New No.	Existing No.	From	To	Length of New NH in Kerala km	
1	66	NH 17	Thalappadi	Edappally	420.777	669.437
		NH 47	Edappally	Kaliyikkavila	248.660	
2	544	NH 47	Walayar	Edappally	168.14	
3	85	NH 49	Bodimettu	Kundanoor	167.593	
4	744	NH 208	Kollam	Kazhuthuruthy	81.280	
5	766	NH 212	Kozhikode	Muthanga Kerala– Karnataka Border	117.600	
6	966	NH 213	Kozhikode	Palakkad	125.304	
7	183	NH 220	Kollam	Theni in Tamil Nadu Border	190.300	
8	966 B	NH 47 A	Wellington Island	Kundanoor	5.920	
9	966 A	NH 47 C	Vallarpadam	Kalamassery	17.200	
10	183 A	-	Bharanikkavu	Pathanamthitta (via) Vandiperiyar	116.800	
11	185	-	Adimaly	Kumali (via) Painavu	96.000	
Total					1,781.57	

Source : PWD (NH)

and Highways (MoRTH). Central Road Fund allocation is used for the development of State Roads, i.e State Highways and Major District Roads. During the period, 31 ongoing works and 16 new works have been arranged. Major Projects with State fund are given in **Table 5.5**.

National Highway Development Project in Kerala

The National Highway Development Project

Phase III covering 664 km length of roads in Kerala is at its the final stage of DPR preparation. The four laning projects under BOT basis would cover all the most important roads of the State. The bidding process for this project has begun. NHAH has also invited bids for the Kannur – Kuttippuram section covering 83.20 km of NH 17. All the projects will be implemented under Design, Built, Finance, Operate and Transfer (DBFOT) pattern or BOT (Toll) basis under NHDP Phase III. A new project at an estimated cost of ₹557 crore from Kalamassery to Vallarpadam (17 km)

Table 5.5
Major Projects with State Fund

Sl.No	Name of Work	Length (km)	AS amount (₹ crore)
1	Kollam bypass – 50 % cost sharing	13.00	352.05
2	Alappuzha bypass - 50 % cost sharing	6.80	348.43
3	Karamana – Kaliyikkavila Phase I – Reach II – Pravachambalam-Vazhimukku	5.50	162.00
4	Thondayad Flyover in Calicut bypass		59.00
5	Ramanattukara Flyover in Calicut bypass		85.00

Source: PWD (NH)

had already been awarded to National Highway Authority of India and the work would start soon.

Kollam and Alappuzha Bypasses

Kollam and Alappuzha Bypasses on the NH 47 are being implemented on a cost sharing basis between Central and State Government. The total cost of the project is ₹700.48 crore and an amount of ₹350.24 crore is included as State share in the Major Infrastructure Development Project by State Government. The total length of Alappuzha bypass (₹348.43 crore) is 6.8 km, of which 3.2 km is an elevated highway, from Kommady Junction to Kalarkode. The work starting on March 16, 2015 under EPC mode and is progressing. M/s RDS CVOC (JV) is the contractor of this time bound EPC with a contract sum of ₹274.34 crore and the project is targeted for completion by May 2018. An amount of ₹135.06 crore is expended till date by the Central and State Governments during the period and 67 per cent of the work is completed. The Kollam bypass that starts from Kavanad and ends at Mevaram is 13 km with aggregate cost of ₹352.05 crore and it includes 3 major bridges, new 7 km road and widening of 4 km existing road. The work commenced on May 27, 2015 under EPC

mode and has made good progress and is scheduled to be completed by August 2018. An amount of ₹117.58 crore is sanctioned as mobilisation advance by the Central and State Governments while 70 per cent of the work is completed.

Kerala State Transport Project (KSTP)

Kerala State Transport Project (KSTP-II) is a World Bank assisted project and Bank has approved a cost of ₹2,403 crore (\$445 million) for the project. Though the loan agreement with the Bank was signed on June 19, 2013, the effective date of the agreement was September 2013. The loan closure date is April 2019. The disbursement ratio is 56 per cent by World Bank and 44 per cent by GOK for the eligible items (except land acquisition and operation cost). The State Government had sanctioned ₹2,500 crore for the project.

The KSTP is implementing the Phase II of the project. The objective of the project is to improve the riding quality of 363 km road section with enhanced road safety provisions. The project has three components. (1) Upgradation of 363 km of road (2) Road Safety Management and (3) Institutional Strengthening. The following works

Table 5.6
Kerala State Transport Project – Present Status

Sl. No	Name of work	Cost	Targeted Date of Completion	Financial Progress	Physical Progress (%)
1	Kasaragod – Kanghangad Road (27.78 km)	133.65	February 2018	84.56	75
2	Pilathara – Pappinisserry Road (20.90 km)	118.20	March 2018	71.72	74
3	Thalassery – Kalarode Road (28.80 km) (Re- arranged)	154.59	June 2018	13.34	15
4	Kalarode – Valavupara Road (25.20 km) (Re arranged)	209.58	August 2018	58.49	23
5	Chengannur Ettumanoor Road (45.40 km)	293.58	February 2018	190.00	73
6	Thiruvalla Bye pass (2.3 km)	31.80 (under revision)	Work progressing	17.19	64
7	Ettumanoor – Muvattupuzha Road (40.96 km)	171.49	March 2018	115.71	80
8	Ponkunnam –Thodupuzha Road (50 km)	227.13	March 2018	210.15	99.2
9	Perumbilavu – Perintalmanna Road (41 km)	210	February 2018	100	100
10	Safe Corridor Demonstration Project Kazhakkuttam – Adoor	142.67	April 2018	7.33	3 (Mobilization activities in progress)

Source : KSTP

are progressing under the project. The details are presented in **Table 5.6**.

About 99 per cent of land acquisition process is completed. The Kazhakuttom – Venjaramoodu – Adoor section of MC Road is selected for inclusion in the development of Safe Corridor Demonstration Project. This selection has been done after a detailed review of road accident scenario in the State by Kerala Road Safety Authority, PWD and the Global Road Safety Facility (GRSF), dedicated Road Safety Improvement Agency of World Bank. Under the Road Safety Management Capacity Building programme, KSTP has engaged an internationally experienced consultant M/s VicRoads, Australia to assist in training on Road safety and implementation activities. Under the Institutional Strengthening component, KSTP has completed DPR preparation for road rehabilitation projects, strategic option studies for improving MDRs, design of green buildings for KSTP and PWD head quarters, review of IT system in PWD and other small studies with the Bank's approval.

Kerala Road Fund Board (KRFB)

Kerala Road Fund Board (KRFB) is a statutory body under the State government established by the KRF Act 2001. The main source of revenue for the Board is the 10 per cent share of motor vehicle tax released by the State government as a budget allocation under non-Plan. The Board is implementing mainly the City Road Improvement Projects on PPP mode. The Thiruvananthapuram City Road Improvement Project has been implemented by Kerala Road Fund Board on PPP (Annuity) mode involving the development of more than 43 km of roads in the capital city and its maintenance for 15 years after construction. The construction works under the project have been completed and is now maintained on annuity payment mode.

KRFB has initiated the Kozhikode City Road Improvement Project, which involves development of 30.55 km of road (7 numbers) at a total cost of ₹401.42 crore. The project is being taken up on

DBFOT – annuity mode. Administrative Sanction has been accorded for land acquisition. Kerala Road Fund Board has also initiated the Cochin City Road Improvement Project, which involves the development of 69.146 km of road (19 numbers) including flyovers and ROBs at a total cost of ₹476.33 crore.

Road Infrastructure Company Kerala Limited (RICK)

Road Infrastructure Company Kerala Limited is a special purpose vehicle incorporated under Indian Companies Act, 1956 by Kerala Road Fund Board. Government of Kerala had taken initiative to implement State Road Improvement Project (SRIP) aimed at the development of selected State Highways and Major District Roads. There are two packages under the State Road Improvement Project (SRIP) - Rehabilitation Package under PPP Annuity mode and the upgradation package with funding from multilateral funding agencies. The rehabilitation package is intended to improve 106.2 km of roads in two packages A&B in Thiruvananthapuram, Kottayam and Kasargod Districts at a total cost of ₹209.91 crore. Upgradation Package is designed to improve 600 km of road by including land acquisition wherever needed for geometrical corrections and junction improvements. Administrative sanction has been accorded to acquire land for Karamana – Vellarada road in Thiruvananthapuram at an estimated cost of ₹21.00 crore under the upgradation package. Major activities of RICK in 2016-17 are given in

Box. 5.2.

Research and Development in Road Sector

Research and development activities play an anchoring role in developing innovative models and techniques to address the challenges in modernising the road system in general and technology up gradation with cost effective infrastructure measures in particular. Design,

Box 5.2
Major Activities of RICK in 2016-17

(1) Rehabilitation Package under DBFMT – Annuity mode

(a) Package A under State Road Improvement Project

Construction of two roads under Package A – Uppala – Kaniyana Road (9 km) and Vidya Nagar – Seenthangoli Road (15.6 km) with Project cost of ₹81.00 crore. The work started on August 26, 2016 with one year construction period and 14 years of maintenance period. 80 per cent of work is completed.

(b) Package B under State Road Improvement Project

Construction of two roads under Package – B, commenced on August 2016. Kanjirappally-Kanjiramkavila Road (36.10 km) and Vellanad- Arynadu – Chettachel Road (21.90 km) at a Project cost of ₹128.91 crore). The construction period is two years and maintenance period is 13 years. 50 per cent of the work is completed.

(2) Upgradation Package

Karamana – Vellarada Road – Government had accorded sanction for land acquisition for Karamana – Vellarada Road and survey by revenue authorities for land acquisition has commenced.

Research, Investigations and Quality Control Board (DRIQ Board), Kerala Highway Research Institute (KHRI) and National Transportation Planning and Research Centre (NATPAC) are the research organisations engaged in research and development of the road sector at present.

(a) DRIQ Board

In 2016-17, the design wing of DRIQ Board completed 8 building designs and 22 building designs partially, structural designs of 44 bridges, 13 general design and 31 detailed designs. Moreover, the research and project preparation unit of DRIQ Board prepared 11 projects. The activities of DRIQ Board in 2016-17 is given in **Box 5.3**.

(b) Kerala Highway Research Institute (KHRI)

Kerala Highway Research Institute, the South Zone Regional Office is the quality control wing mandated with the task of assuring quality

in works undertaken by PWD. Quality control sub division of Pathanamthitta, Alappuzha, Kollam Districts are under the jurisdiction of KHRI. KHRI conducts training programmes for technical and non technical staff of PWD. The activities of KHRI in 2016-17 are given in **Box 5.3**.

As a part of Quality Control of Works and Test, a total of 136 tests were conducted and the results forwarded to the respective Chief Engineers for further action.

(c) National Transportation Planning and Research Centre (NATPAC)

NATPAC is the Research Centre conducting research and development and extension activities in the field of transportation and allied areas under the administrative control of Kerala State Council for Science, Technology and Environment (KSCSTE) of

Box 5.3**Major Activities of DRIQ Board and KHRI in 2016-17****DRIQ Board**

- DPR preparation for KIIFB Projects viz, Kozhikode Balussery road, Vaikom Vechur, Thiruvalla – Mallappally Road, Erattupetta – Wagamon, Four laning of Vazhayila – Pazhakutty and Kacherinada – 11th stone road
- DPR preparation for the development of Muvattupuzha town portion.
- Preparation of alignment from Vazhimukku to Kaliyikkavila Phase II.
- Improvements of Junctions –Mukkada Junction, Parippalli in NH 66.
- Junction Design to Cherkala Junction, Kasargod - Drawing given to site for checking feasibility.
- Comparison study of Vyttila flyover proposals of PWD (NH) and KITCO – Report approved and submitted to Government.

Kerala Highway Research Institute (KHRI)

- As part of Establishment of Quality Control system and upgradation of KHRI as Quality Control Unit, Laboratory Information Management System was implemented.
- Modernization of office facility and lab facility of KHRI.

Science and Technology Department. The broad areas of activities by NATPAC include transportation, planning and road safety, regional transportation, highway planning and development, traffic management, water transport and providing consultancy services to various user agencies in the domain area.

In the year 2016-17, NATPAC carried out 28 research projects, studies on 19 externally funded projects and 13 road safety programmes sponsored by Kerala Road Safety Authority (KRSA). Several road safety training materials have also been developed by NATPAC. The Plan programmes are mostly R&D projects to address the traffic and transportation issues of the State. The externally funded projects are need based studies entrusted to NATPAC by government agencies like PWD, Transport, Tourism, Water Resources, Town Planning Department and other Organisations like Kochi Metro Rail Company, National Highway Authority of India (NHAI), Roads and Bridges Development Corporation Kerala (RBDCK), Techno park, Kerala Rapid Transit Corporation Limited (KRTL), Infrastructure Kerala Limited

(INKEL) and Inland Water Ways Authority of India (IWAI).

NATPAC has undertaken studies on the integration of multi-modal transport in Kochi city for increasing patronage in public transport system by integrating Inland Waterways, Non – Motorised Transport (NMT), Regional Bus Transport, City Bus Transport and Metro Feeder into an efficient system. A Comprehensive Mobility Plan for Thrissur City was prepared. The Centre has prepared GIS-based road and traffic database for the roads in Kerala, which can be further developed to prepare database pertaining to road accidents, pavement management system, traveller/tourist information system etc for the State. NATPAC has developed a perspective plan for National Highway sections in Kozhikode division and developed a growth rate model for National Highways in Kerala. During this period, the Centre has completed 100 road safety projects/ programmes pertaining to Schools, Panchayats, drivers and other road users reaching a target of more than 3,000 road users.

Road Transport

Transport activities in Road Sector are carried out by Kerala State Road Transport Corporation (KSRTC) and Motor Vehicles Department (MVD) in the State. In Kerala, the road transport industry is dominated by private service providers. The road freight services are wholly owned and operated by the private sector.

Motor Vehicle Department

Motor transport sector is an important and integral part of the State economy. Kerala has 110.3 lakh registered motor vehicles as of March 2017. For the last two decades it has experienced a compounded annual growth rate of above 10 per cent. The number of vehicles per 1,000 population for Kerala in March 2017 is 330. According to World Development Indicators (2015), number of vehicles per 1,000 population in India is 18, China 47 and United States 507.

The growth of vehicle population in Kerala is eight per cent over the previous year. The growth

of Motor Vehicles during last ten years is shown in **Figure 5.1**. The number of motor vehicles having valid registrations as on March 31, 2017 is 11,030,037 as against 10,171,813 in the previous year. The details are in the **Appendix 5.7**. The number of newly registered vehicles is 939,580 in 2016-17 and the details are given in **Appendix 5.8**. Personal vehicles have recorded a faster growth rate over the previous year. The District-wise growth of vehicle numbers in Kerala is given in **Appendix 5.9**. The percentage of category-wise motor vehicles registered in 2016-17 is shown in **Figure 5.2**.

About 2.574 vehicles are newly added to the vehicle population every day. Of this 1,802 are two wheelers. The highest vehicle population was recorded in Ernakulum district with 16,75,199 vehicles (15.19 per cent) followed by Thiruvananthapuram with 14,01,090 (12.7 per cent). Wayanad district has the lowest number of 156,216 (1.42 per cent) vehicles. Category wise growth of motor vehicles in Kerala since 2010 to 2017 is in **Appendix 5.10**. The mismatch between growth in motor vehicles and the capacity augmentation of roads has resulted in increasing traffic congestion and

Figure 5.1
Growth of Motor Vehicles Since Last Ten Years

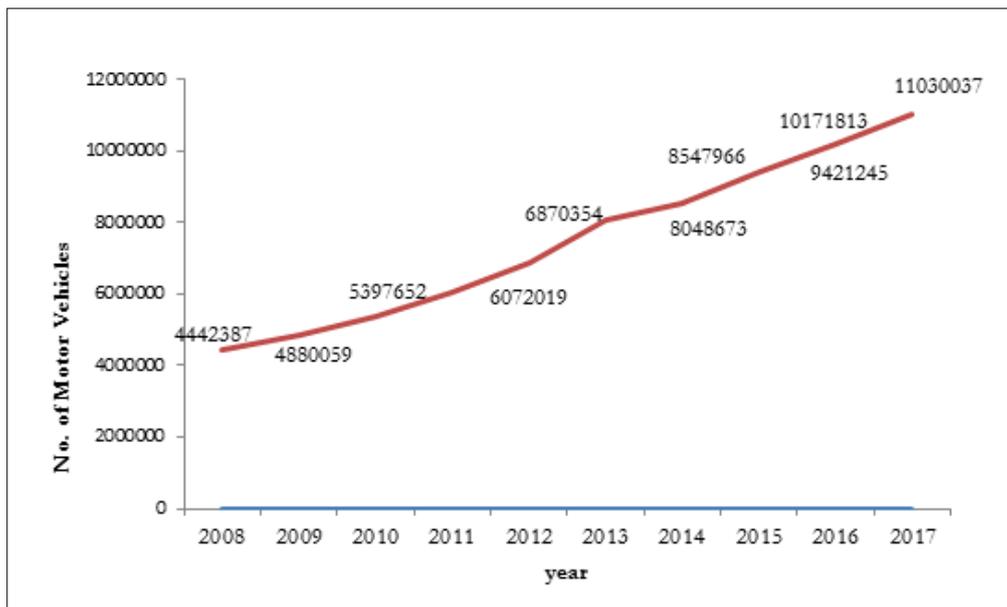
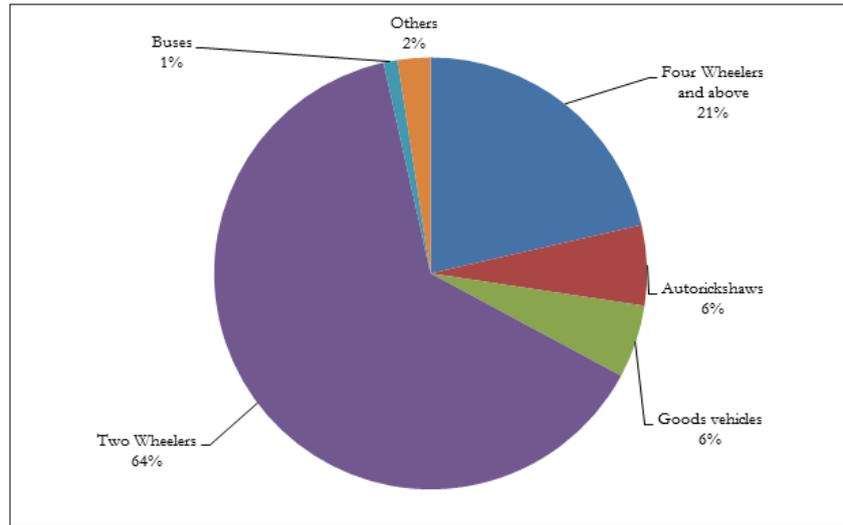


Figure 5.2
Distribution of Motor Vehicles Registered by Type in 2016-17



road accidents throughout Kerala. The revenue earned by Kerala Motor Vehicles Department has risen from ₹1,831.15 crore in 2012-13 to ₹3,026.42 crore during 2016-17.

Major schemes implemented by Motor Vehicles Department are road safety measures, establishment of vehicle testing stations and modernisation of check posts. Department has started Driver Testing Tracks at Chevayoor (Kozhikode), Elavayoor (Kannur) and Parassala (Thiruvananthapuram). The works of three tracks, one each at Muvattupuzha, Muttathara and Monuppally are going on. Radar Surveillance System (Speed Camera System) was installed at Palakkad, Thrissur, Kollam, Kottayam, Ernakulam and Kannur. A new initiative by the Department was "Third Eye Enforcement". Through the scheme, the public can assist the enforcement team of the department by capturing and sending the traffic violation in terms of video clips, images etc in real time through an exclusive public web portal. Road safety suggestions/feedbacks from the public are also incorporated in this project.

E-Governance

Government is aiming to strengthen web based database of the vehicles and adopt E-Governance

for online payment of taxes, registration, modern methods of vehicle tracking and monitoring systems, covering Electronic Road Pricing (ERP) system to decongest and reduce accident prone locations.

Automatic driver licensing system and Automatic Vehicle Testing System

- All RTOs to install automatic driver licensing systems and vehicle testing systems accompanied by live road test.
- Strict test with adjustment of rear view mirrors, usage of indicators and seat belt.
- Online State Registry for Licenses and Vehicle Registration in line with MoRTH (Vahan and Sarthi).
- Online learners license.
- Online technology based licensing system.
- Technology based fitness test of vehicles.
- Registration of vehicles and obtaining driving licenses from anywhere in State.

Motor Vehicles (Amendment) Bill 2016, GOI

The Motor Vehicles (Amendment) Bill 2016, Government of India, aims to amend 68 sections

out of the total 223 sections. Chapter 10 of the Act has been deleted and chapter 11 is being replaced with new provisions to simplify third party insurance claims and process of settlement. The important provisions are the following

- Higher Penalties – The minimum fine for being caught driving under the influence of alcohol or drugs has been increased from ₹2,000 to ₹10,000 and for rash driving from ₹1,000 to ₹5,000
- Cashless treatment for road accident victims
- Increased compensation for family of the deceased – If an individual dies in hit and run case, the central government is required to provide a compensation of ₹2.00 Lakh or more to their family
- Inclusion of Good Samaritan Guidelines – to protect Good Samaritans (bystanders who come, forward, in good faith, to help road accident victim) from civil and criminal liability and make it optimal for them to disclose their identity to the police or medical personnel
- National Transportation Policy – Central Government is required to develop a ‘National Transportation Policy’ to establish a framework for road transportation planning, granting of permits and prioritisation of the road transport system
- Compulsory Insurance – Central Government to set up a ‘Motor Vehicle Accident Fund’ that will provide an automatic cover for all road accident victims in India
- Automated Fitness Training for Vehicles – Introduction of an automated process to test the fitness of motor vehicles by October 1, 2018
- National Registry for Licenses and Registrations – Creation of a ‘National Register for Driving License’ and a ‘National Register for Vehicle Registration’ through Vahan (for vehicle registry) and Sarthi (for driving licenses) platform
- Electronic Monitoring – Government to ensure proper electronic surveillance on national and State highways and urban roads.

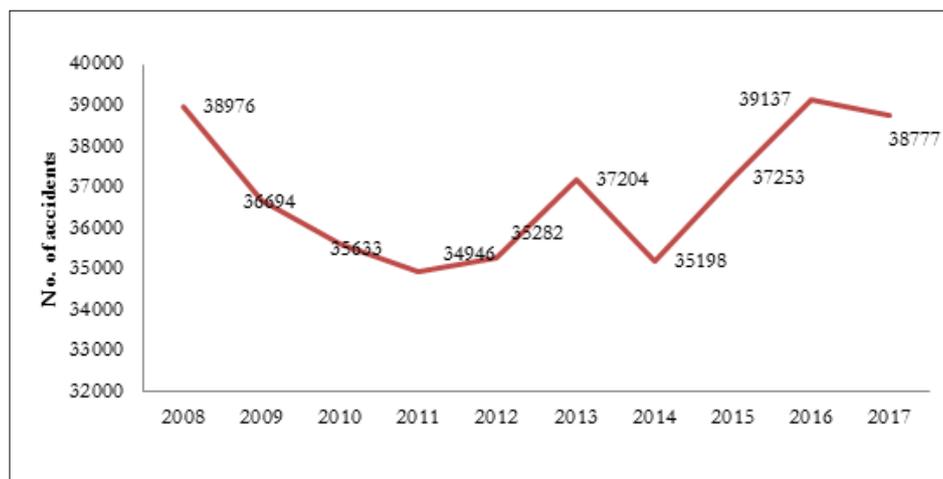
As the Vahan -4 (a web based application software intended to carry out the works related to Vehicle registration) and Sarthi -4 (a web based application software intended to carry out the works related to Driving Licenses) are intended for use across the country, network traffic to the application would be very high at the office working hours. Vahan and Sarthi facilitated with smart card/plastic card based licenses and registration certificates are far superior to the present laminated cards.

Road Accidents

Even though several initiatives have been taken by the Police to enforce road discipline and enforcement of rules by Motor Vehicles Department, road accidents are increasing. The increasing trend of traffic accidents is a matter of great concern. The analysis of figures from 1980-81 onwards shows that an increase in the number of accidents was steady from 7,064 in 1980-81 to 20,900 in 1990-91 and 34,387 in 2000-01 and 35,282 in 2010-11 and 3,9137 in 2015-16. The number of accidents decreased to 38,777 in 2016-17. The bigger States like Uttar Pradesh, Gujarat and Rajasthan report far less number of accidents compared to Kerala. The district wise motor vehicle accidents in Kerala and the category wise details of motor vehicles involved in road accidents are given in **Appendices 5.11** and **5.12** respectively.

During 2016-17, Kerala registered 38,777 accidents (106 per day). Accidents due to KSRTC buses was 1,000 in 2016-17 (3 per day) and other buses was 3,501(10 per day). The number of two wheelers has increased from 64.72 lakh in 2016 to 65.77 lakh in 2017, recording average annual growth rate of 11 per cent. The number of traffic crashes involving two wheelers has decreased from 31,595 (87 per day) in 2016 to 15,033 (41 per day) in 2017. Bike accidents account for nearly 38 per cent and motor cars for 28 per cent respectively of the total accidents reported in the State. Trend of motor vehicle accidents in Kerala is presented in **Figure 5.3**.

Fig 5.3
Trend of Motor Vehicle Accidents in Kerala



Kerala recorded a total of 38,777 accidents in 2017 which is 351 accidents per lakh vehicles registered in the State. Growth of accidents in the State during the last eight years is given in **Table 5.7**. It can be seen that the accident occurrences had exhibited fluctuation during various time periods although not showing any definite patterns of growth or decline. But it is to be highlighted that there is a constant decrease in accidents/lakh vehicles every year since 2010.

Most of the accidents are attributed to the fault of drivers as per records available with Traffic Police. However, deficiencies in road design also affect motor vehicles, a fact generally overlooked

as bad road conditions. Road safety training for various categories of road users, rectification in road design, deficiencies in inclusion of road safety aspects in the planning and operation stages of road construction are the primary facts to be taken up for reducing accidents. The percentage of vehicle category wise accidents in Kerala in 2016-17 is shown in **Figure 5.4**.

Kerala State Road Transport Corporation (KSRTC)

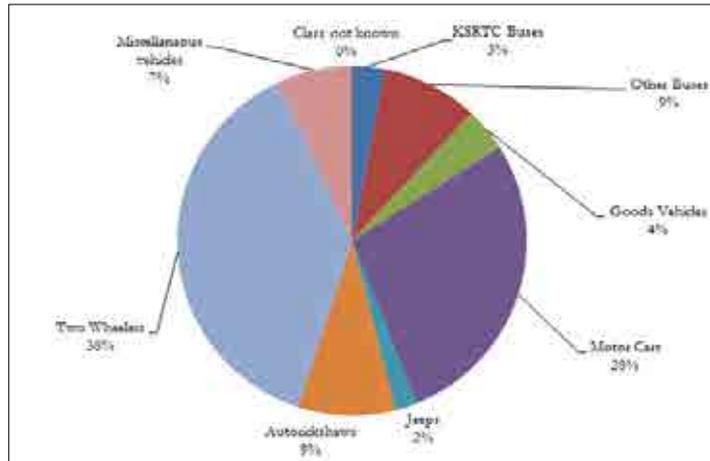
Kerala State Road Transport Corporation (KSRTC) is the single largest public sector undertaking,

Table 5.7
Accident Trend in Kerala in 2010-2017

Year	No. of Motor Vehicles	No. of Accidents	Accidents/lakh vehicle
2010	5,397,652	35,633	660
2011	6,072,019	34,946	576
2012	6,870,354	35,282	514
2013	8,048,673	37,204	462
2014	8,547,966	35,198	412
2015	9,421,245	37,253	395
2016	10,171,813	39,137	385
2017	11,030,037	38,777	351

Source: Motor Vehicles Department, State Crime Record Bureau

Figure 5.4
Distribution of Road Accident by Vehicle Type in Kerala during 2016-17



carrying out passenger transport operations in the State. The gross revenue earning of KSRTC during 2016-17 was ₹1,827.45 crore. The gross revenue expenditure was ₹2,367.60 crore and operating loss during this period was ₹540.15 crore.

Out of 5,953 buses of KSRTC, 1,095 (18.4 per cent) buses are ten or more years old. The status of KSRTC buses is given in **Appendix 5.13**. The average earning per vehicle per day on road of the Corporation has decreased from ₹12,060 in 2015-16 to ₹11,465 during 2016-17. During the period, 699 new buses were put on road and 460 buses scrapped. The Corporation operated its bus service for a total distance of 5,771 lakh km carrying about 10,403 lakh passengers. The major indicators showing operational efficiency and district wise operational statistics of KSRTC are given in **Appendices 5.14** and **5.15** respectively.

The fare structure of KSRTC remained unchanged during 2016-17. The fares of ordinary and city buses are 64 paise per km, 72 paise per km for super fast, 90 paise to super deluxe service, 110 paise for A/C Air Bus and 130 paise for High Tech Volvo Buses. The fare structure of KSRTC is given in **Appendix 5.16**.

As part of fleet renovation, KSRTC has introduced multi axle buses like Scania on wet lease basis from

its dealers. These buses are operating in inter State routes. In 2016-17, all major workshops of KSRTC were renovated by providing modern equipments as per the recommendation of the Hanumantha Rao report on modernisation of workshops.

Inter-Unit analysis of KSRTC reveals that about 30 per cent of the units of the State exhibit poor performance. The district wise details of operational statistics are given in **Appendix 5.17**. Financial performance of KSRTC is not in tune with its physical achievements due to an increase in operating expenditure, hike in pension commitments, increase in interest payments, operation in uneconomic routes and the granting of concessional travels leading to increasing losses for the Corporation. Though the occupancy ratio in KSRTC has increased from 67.14 per cent in 2009-10 to 75.09 per cent in 2016-17, it is still not a significant increase considering the higher occupancy in private carriages and inadequate road infrastructure in Kerala which results in lesser use of public modes of transport. Private operators are dominant in passenger transport operation in the State. Fleet utilisation of KSRTC is only 81 per cent. More than 12 per cent of the buses are under repair and 25.9 per cent of the vehicles are over aged. Staff per bus ratio is as high as 6.05. The number of breakdowns per lakh kilometers in KSRTC is

Box 5.4
Major Internal Indicators of KSRTC

• Average Fleet held	:	5,953
• Average Fleet operated	:	5,795
• Average age of Fleet (Years)	:	7
• Over aged vehicles	:	25.9 %
• Staff strength	:	35083
• Staff per bus ratio (fleet held)	:	5.9
• Staff per bus ratio (fleet operated)	:	6.05
• Staff productivity (km/staff/day)	:	45.07
• Fuel efficiency (km/litre of HSD)	:	4.22
• Occupancy Ratio	:	75.09 %

Source: KSRTC

around 6 while that of neighboring Karnataka RTC (KnRTC) and Bangalore Metropolitan Transport Corporation (BMTC) is less than one. The number of buses owned by KSRTC is given in **Appendix 5.18**. The major internal indicators of KSRTC is given in **Box 5.4**. The operational efficiency of KURTC is given in **Appendix 5.19**.

Heavy losses due to operational inefficiency, high bus/staff ratio, operation in uneconomic routes and unviable depots are some of the issues/challenges faced by KSRTC. A professional techno economic study needs to be done to identify and suggest measures to deal with the critical issues/challenges faced by KSRTC.

Issues, Challenges and Way Forward in Road and Road Transport Sector

Most of the roads in the State do not have adequate width to address the existing level of traffic, only one fourth of the roads have either two lanes or four lane capacity while most of the roads have single lane or intermediate lane capacity. In the case of National Highways, only about 12 per cent of the roads have four lane capacities while the remaining roads have only two lanes or intermediate lane capacity. Bulk of the inter city and interstate traffic is carried out by the National

and State Highways which are only 8 per cent of the total network. Considering the demand supply gap, there is a huge need to upgrade existing road network. The existing road network has to undergo a qualitative improvement with the aim to reduce traffic congestion and delay, easy access to destinations and reduction in accident risks. Most of the PWD roads have to undergo massive upgradation with widening and incorporating road safety features.

A criterion should be developed for prioritising the road works in the State. Major emphasis should be given to widening the State Highways and Major District Roads along with professional design and adequate drainage facilities. The new road development initiative like the Hill Highways, Coastal Highways, bypasses etc needs to be completed during the 13th Five-Year Plan period.

There is a need to undertake planned development of State Highways, important Major District Roads and City roads in the State which addresses geometrical improvement, junction improvements, covering pedestrian facilities, utility ducts, re-laying the roads incorporating technical corrections and entering into maintenance contracts. Road side parking is another issue to be addressed to improve the level of service.

Co-ordination between the physical infrastructure providers – Public Works Department (PWD), Railways, Inland Transport Authority, Airports and Coastal Shipping Agencies to build transport infrastructure, operate and maintain the existing ones are required. Physical infrastructure has to be designed to support an inter modal transport network.

The Approach to 13th Five-Year Plan in the road and road transport sector is given in the **Box 5.5**.

Railways

The Indian Railway system is the second largest network in the World under a single management. It provides one of the cheapest means of transport in India. The Railway network comprises 90,803 km of track over a route of 66,030 km and 7,137 stations. It is the fourth largest network in the world after USA, Russia and China. Kerala occupies a significant position on the Indian Railway map with 1,257 route km and 1,588 km of total track. Thiruvananthapuram and Palakkad

divisions of the Southern Railway zone are the administrative divisions. Palakkad division operates 76 express and 49 passenger trains and carries 2.16 lakh passengers. Thiruvananthapuram division operates 80 express trains and 60 passenger trains and carries 2.6 lakh passengers daily. All the railway lines passing through the State have been converted into broad gauge. There are about 200 railway stations in the State. Doubling and electrification works are in progress in various parts of the State. Feasibility studies for some new lines are also underway in the rail sector.

Kerala Rail Development Corporation (KRDCL)

The Kerala Rail Development Corporation (KRDCL), a joint venture company between GOI and GOK, has been formed with the objective of taking up major railway infrastructure development projects in Kerala on a cost sharing mode. The JV is registered with an equity share of 51 per cent and 49 per cent between GOK and GOI and proposes to take up the upcoming rail projects in Kerala through project specific SPVs.

Box 5.5

The Approach to 13th Five-Year Plan in the Road and Road Transport sector

- For an environmentally sustainable Kerala, building of green corridors, and the promotion of green logistics and green vehicles (including fleet renovation programmes adopting innovative technologies).
- To develop facilities for non – motorized transport in cities, including skywalks, footbridges and allied facilities.
- Attempt to shift traffic from road to rail across the length of Kerala in the long run.
- Ensuring road safety is of the utmost importance while devising policies for the State in the area of transport.
- Installation of speed cameras and new measures for law enforcement and road safety auditing for ensuring road safety.
- To rejuvenate KSRTC, focusing on (i) human resources (ii) operational issues (iii) technical issues and (iv) efficient utilization of infrastructure/resources.
- Use of Inland waterways for passenger and cargo traffic in Kerala for the benefit of environment, reduce pressure on road and rail transport and enhancement of tourism potential of the State.
- To make the National Waterway – 3 functional by attracting more cargo and passenger traffic through it.

Table 5.8
Projects Identified by KRDCL

Sl. No.	Project	Length (KM)	Sub Theme under IR Vision Plan
1	RRTS between Thiruvananthapuram- Chengannur	125.56	Increase throughput on existing network
2	Thalassery- Mysore New BG Line via Kannur International Airport	206.51	Accelerate Infrastructure build out
3	Ernakulam Terminus (ERG) Redeveloping as a third terminus for Cochin	5	Build Terminal Infrastructure
4	Cochin International Airport New BG line and building new passenger station and container terminal	15	Build Terminal Infrastructure
5	Vizhinjam-Balaramapuram new BG line linking Vizhinjam International Seaport to Thiruvananthapuram- Kanyakumari line	12	Accelerate Infrastructure build out
Phase II - 2 projects			
1	Erumely - Punalur New BG Line via Pathanamthitta, linking Sabari line with Kollam Shengottah line	65	Accelerate Infrastructure build out
2	Ettumanoor- Pala New BG Line linking Sabari line with Thiruvananthapuram -Ernakulam line	15	Accelerate Infrastructure build out
Phase III – One Project			
1	Nilambur - Nanjangud New BG line via Sultan Bathery	236	Accelerate Infrastructure build out

Source: KRDCL

The joint venture company has an initial paid up capital of ₹100 crore based on the quantum of projects to be undertaken. The authorised equity share capital and paid up capital can be enhanced from time to time with the approval of Ministry of Railways (Railway Board) and State Government of Kerala. List of Projects identified by KRDCL during 2017 are given in **Table 5.8**.

Kochi Metro

Kochi Metro Rail Project (KMRP) is the flagship project of the Government of Kerala designed to address the transportation woes of Kochi City. The project is implemented through the Kochi Metro Rail Ltd (KMRL), which is a special purpose vehicle jointly owned by the Government of Kerala and Government of India with equity participation. The Union Government gave a sanction for the

project in July 2012 at a total cost of ₹5,181.79 crore for Aluva - Pettah 25.6 km stretch. KMRL has signed an agreement with GOI and Delhi Metro Rail Corporation Ltd (DMRC) for executing the project as per the tripartite agreement signed between GOI, GOK and KMRL. The details of the ongoing project are in **Table 5.9**.

The Phase – I of the Kochi Metro Rail Project was sanctioned in July 2012, which envisages a route length of 25.612 km from Aluva to Pettah on a fully elevated metro viaduct with 22 stations. The sanctioned cost of the project is ₹5,181.79 crore. The project consists of two basic construction elements, viz, the civil structures and the systems. The civil element comprises the metro viaduct, 22 metro stations and the track. The systems side consists of the Rolling Stock (Metro Rail Coaches), signaling telecom and electrification for traction and power supply facilities. A metro train depot on

Table 5.9
Details of Kochi-Metro

Year	Connected Places	Length (km)	Project Cost (₹ crore)
Phase I	Aluva to Pettah (22 stations)	25.6	5,181.79
Phase I (a)	Pettah to S.N. Junction (Extension)	2.00	359.00

Source: KMRL

15.12 hectares of land has also been constructed for the stabling and maintenance of trains.

Reach –I from Aluva to Palarivattom with a section length of 13.4 km and 11 stations was inaugurated by Hon'ble Prime Minister on June 17, 2017 and was opened to general public on June 19, 2017. The Reach II-A from Palarivattom to Maharajas College with a section length of 4.892 km and 5 stations was inaugurated by Hon'ble Chief Minister on October 3, 2017 and was opened to general public on that day itself. The work of Reach 2 B from Maharajas College to Petta with a section length of 7.32 km and 6 stations is in progress and expected to be commissioned in 2019. The financial progress for the entire project as on September 30, 2017 is around 80 per cent of the approved cost.

Light Metro Rail Projects at Thiruvananthapuram and Kozhikode

Light Metro Rail Project is a Mass Rapid Transit System (MRTS) proposed to be implemented in the cities of Thiruvananthapuram and Kozhikode by a special purpose vehicle, Kerala Rapid Transit Corporation Limited (KRTL). The DPR has been prepared by Delhi Metro Rail Corporation (DMRC). A route length of 13.33 km with 14 stations in Kozhikode has been decided as the first phase of the project. The estimated completion cost of the project is ₹4,219.00 crore for Thiruvananthapuram and ₹2,509.00 crore for Kozhikode totalling to ₹6,728.00 crore (including Central taxes and land cost). The estimated completion period of the project is five years for Thiruvananthapuram and four years for Kozhikode.

A new Metro Rail Policy has been announced by Government of India in August 2017, which specifies guidelines to be followed in the preparation of proposals for new metro projects in the country that seek financial assistance of the GOI. These guidelines are also applicable to all existing proposals for metro rails, being processed by the GOI. The proposal for the Light Metro projects in Thiruvananthapuram and Kozhikode will also have to be revised as per the guidelines of this new policy. The revised proposal will subsequently be submitted to the GOK for clearance by the State cabinet. Subsequent to the clearance, the revised proposal will be sent to the Ministry of Housing and Urban Affairs (MoHUA) for the approval of GOI.

Administrative Sanction was accorded for the construction of flyovers at Sreekariyam, Pattom and Ulloor, which are major preparatory works in connection with the Light Metro project at Thiruvananthapuram. The estimated cost for the work is ₹272.84 crore, which includes the cost of acquisition of 2.77 ha. of private land. The funds for the work of flyovers are being availed from KIIFB. Administrative Sanction has also been accorded for widening of Mananchira – Meenchanda road, along the proposed Light Metro corridor in Kozhikode.

Water Metro Project

Kochi Water Metro Project was sanctioned in November 2015 at a total project cost of ₹748 crore envisaging a route length of 76 km in 16 routes covering 38 Jetties. The funding pattern is ₹112.09 crore (15 per cent) as equity share from GOI and GoK and ₹635.88 crore (85 per cent) borrowing from bilateral funding agency.

Table 5.10
Water Metro – Funding Pattern (₹ crore)

Source	Phase I	Phase II	Ancillary Infrastructure	Total
Loan	181.81	132.78	265.12	579.71
Equity	32.08	23.43	46.79	102.30
Total	213.89	156.21	311.91	682.01

Source: KMRL

Administrative Sanction was accorded for ₹682.01 crore, of which ₹579.71 crore is loan component and ₹102.30 crore is State share for implementing the project. The tri-party agreement between GOI, KfW and KMRL was signed in June 2016 for 85 million Euro. General consultancy has been awarded to AECOM Consortia and agreement with the consultancy was signed on 2nd June 2017. The details are given in **Table 5.10**.

Initial Investigation works have started. Bathymetric survey works to finalise the routes and dredging quantities have been awarded. Land acquisition process for Jetties have been initiated. A total of 19 out of 38 cases for jetties location has been forwarded to land acquisition wing, Thiruvananthapuram for government clearances.

Air Transport

Air transport is coming of age and meeting a bulk of international trips and limited inter-State trips. Inter-city services within the State have just started. Unlike other states where the capital city has the highest air traffic, in Kerala, air traffic is distributed evenly over the three airports. Despite this, all three international airports of Kerala are among the top 15 busiest airports in India. More than eight lakh domestic passengers and 50 lakh international passengers are using these airports facilities in the State every year.

Kerala has three international airports viz, Thiruvananthapuram, Kochi and Kozhikode. All civilian airports functioning in the State are international airports, a feature which is unique to Kerala. Thiruvananthapuram International Airport is one of the major airports in South

India. It plays a major role in the world aviation map, connecting and controlling about nine international air-routes and eight domestic air-routes and provides approach control service to eight major and minor aerodromes. CIAL was ranked the third best airport in the 5 to 15 million passengers category based on the 2016 Airport Service Quality (ASQ) Survey conducted by Airports Council International (ACI), Montreal, Canada. CIAL is experimenting with innovative models which are comprehensive, sustainable and cost effective. Kozhikode International Airport is the twelfth busiest airport in India and the third in Kerala. Upon completion of Kannur International Airport, Kerala will join Tamil Nadu as the State with the most number of international airports.

Kannur International Airport Limited (KIAL) was set up by Government of Kerala to build and operate Kannur International airport. The Kannur airport project is being developed in two phases by KIAL. The first phase is envisaged to span from 2016-17 to 2025-26 and second phase would be from 2026-27 to 2045-46. The airport would have flight movements of 39,638 nos (peak hour's 18 nos) p.a with 4.67 million passengers and 60,758 tons of cargo. The facilities in the airport include a runway length of 3,050 m, with a terminal building of 96,000 sq. m, 20 parking stands (apron) and 22,000 sq. m. car/bus parking, 1,200 sq. m. ATC/technical building and around 7,750 sq. m near the apron area of ground service equipment parking area

The Board of Directors decided to extend the length of runway from 3,050 m to 3,400 m and land acquisition process in progress for this. All the facilities are nearing completion. The navigation

work has been completed by Airports Authority of India. The commissioning of the work including Instrument Landing System (ILS) calibration and aeronautical information publication is scheduled to be done by the end of August 2018. Security clearance of BCAS, license of Director General of Fire, CISF, customs immigration including the posting of officials of Meteorological Department is expected to be completed so that KIAL could commence its first phase of commercial operation by September 2018.

Water Transport

In Kerala water transport is a viable alternative or addition to road and rail transport. It has the largest carrying capacity and is most suitable for carrying bulky goods over long distances. There are three primary categorisation for water transport. They are ocean transport, inland water transport and coastal shipping. The complex network of connections between coastal ports, inland ports, rail, air, and truck routes forms a foundation of material economic wealth worldwide. Though environmental-friendly and the most economical mode of transport, it remains largely under-exploited. By enhancing the efficiency and sustainability of water transport, a comprehensive normative framework for the key aspects of navigation need to be established. This chapter deals with the various Government plans and policies aimed at the overall development of ports and inland waterways facilitating and promoting coastal shipping, foreign trade and inland water transport.

Port Sector

Maritime transport is the backbone of globalisation and lies at the heart of cross-border transport networks that support supply chains and enable international trade. An economic sector in its own right that generates employment, income and revenue, transport – including maritime transport cross-cuts and permeates other sectors and activities. Maritime transport enables industrial development by supporting manufacture growth;

bringing together consumers and intermediate and capital goods industries, promoting regional economic and trade integration. From ship building to cargo routes to the future of seafaring, the maritime sector continues to evolve in response to economic, political, demographic, and technological trends. Understanding these trends is critical to improving the performance of the industry's capital investment as well as operational efficiency, providing the backdrop for successful long-term maritime trade strategy.

Ports in India

India's long coastline of over 7,500 km is home to the country's 12 major ports and 200 non major ports. Out of 200 non major ports located along the western and eastern corridors only 139 are operable i.e. 69.50 per cent. Indian ports are the gateway to India's international trade by sea, handling over 90 per cent of foreign trade. The 12 major ports managed by the Port Trust of India are under Central Government jurisdiction and 139 minor ports are under the jurisdiction of the respective State Governments. About one-third of minor ports only undertake regular commercial operations. These are located mainly in Gujarat, Andhra Pradesh, Goa and Maharashtra.

The major ports include Chennai, Kamarajar (Ennore) and V.O Chidambaranar (in Tamil Nadu), Cochin (in Kerala), Kandla (in Gujarat), Kolkata (in West Bengal), Mumbai and Jawaharlal Nehru Port Trust (JNPT) (in Maharashtra), Mormugao (in Goa), New Mangalore (in Karnataka), Paradip (in Orissa) and Vishakapatnam (in Andhra Pradesh).

Cargo traffic in Major Ports of India

In 2016-17, Major and non-major Ports in India have accomplished a total cargo throughput of 11,330.9 lakh tonnes reflecting an increase of 5.7 per cent over the corresponding period of 2015-16. The growth in cargo handled at Major and Non-major ports in 2016-17, were 6.8 and 4.2 per cent. respectively. The share of Major Port in the total traffic handled at Indian Port increased from

56.5 per cent in 2015-16 to 57.2 per cent in 2016-17.

The volume of seaborne cargo traffic handled by ports is mainly shaped by the levels and changes in both global and domestic activity. Cargo traffic at India's 12 major ports during 2016-17 was 6,477.6 lakh tonnes achieving growth of 6.8 per cent over the 6,063.7 lakh tonnes handled in 2015-16.

As per the Port Statistics 2016-17, Ministry of Shipping, GOI during 2016-17, Mormugao recorded highest growth in traffic 59.7 per cent followed by Paradip Port (16.5 per cent), Cochin port (13.2 per cent), New Mangalore port (12.3 per cent), Visakhapatnam port (7 per cent), Kandla port (5.4 per cent), Chidambaranar port (4.4 per cent), Mumbai port (3.2 per cent), Haldia dock complex (1.9 per cent) and Chennai (0.3 per cent). Major ports which recorded a fall in traffic during 2016-17 were Kamarajar port (6.8 per cent), Kolkata Dock System (KDS) (3.6 per cent) and Jawaharlal Nehru Port Trust (JNPT) (2.9 per cent).

Amongst the major ports, Kandla Port handled the maximum cargo of 105.44 million tonnes with a share of 16.3 per cent in total cargo handled at

major ports followed by Paradip (13.7 per cent), Mumbai (9.7 per cent), JNPT (9.6 per cent), Vishakhapatnam (9.4 per cent), Chennai (7.8 per cent), NMPT (6.2 per cent), Chidambaranar (5.9 per cent), Haldia Dock Complex (5.3 per cent), Mormugao (5.1 per cent), Kamarajar (4.6 per cent), Cochin (3.9 per cent) and Kolkata Dock System (KDS) (2.5 per cent) in 2016-17.

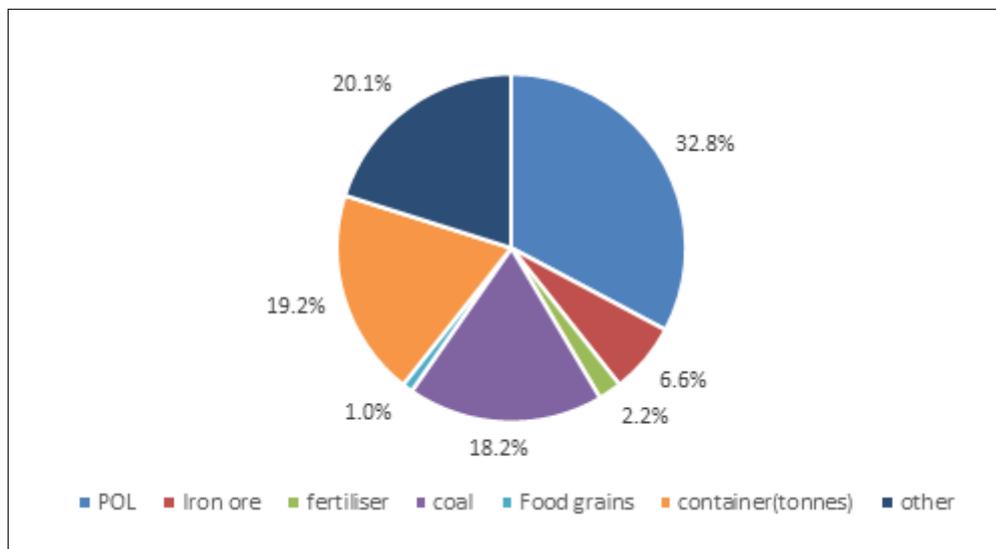
Figure 5.5 shows the commodity wise break up of cargo handled at major Indian ports in 2016-17.

In terms of composition of cargo traffic handled in 2016-17 at major ports, the largest commodity groups (with share in per cent in total cargo handled) are POL (32.8 per cent), others cargo (20.1 per cent), container traffic (19.2 per cent), Coal (18.2 per cent), Iron ore (6.6 per cent) and Fertilizer and Fertilizer Raw Material (2.2 per cent) and food grains (1.0 per cent) (Source: Port Statistics 2016-17, Ministry of Shipping, GOI).

Figure 5.6. shows the pattern of cargo traffic at Major ports in South India from 2012-17.

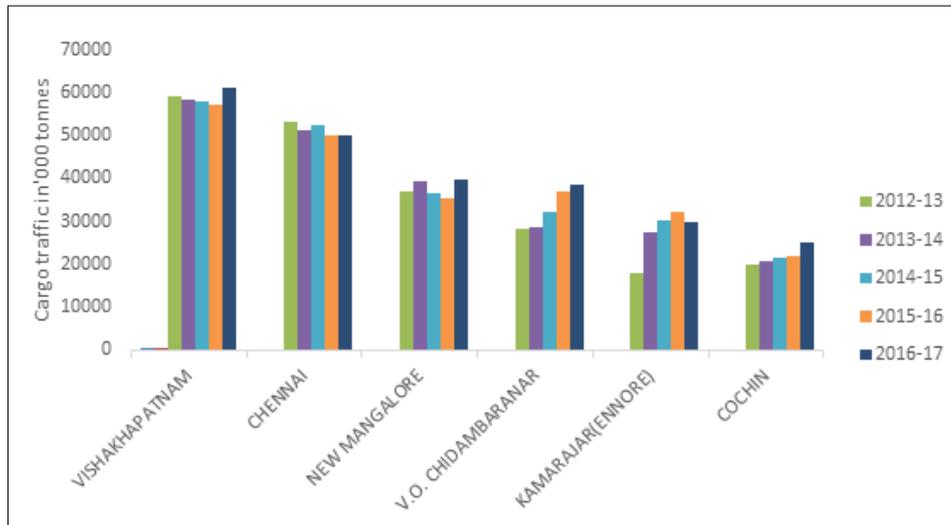
Vishakhapatnam Chennai and New Managalore hold first, second and third position in terms of the quantity of cargo handled over the period 2012-

Figure 5.5
Commodity-wise Distribution in Major Ports of India in 2016-17, in per cent



Source: Ministry of Shipping/Indian Ports Association

Figure 5.6
Cargo Traffic in Southern Major Ports of India in 2012-17
(in thousand tonnes)



Source: Ministry of Shipping/Indian Ports Association

17 **Appendix 5.20.** The growth rates of cargo movement in the 3 ports were 6.99 per cent, 0.31 per cent and 12.26 per cent respectively in 2016-17. In the case of other 3 ports, Chidbambarnar, and Cochin ports have also exhibited upward trends in 2016-17 with 4.38 per cent, and 13.16 per cent growth respectively. However, cargo handled at Ennore has declined by 6.78 per cent in 2016-17.

Cargo traffic in non-major ports of India

Non-major ports handled 42.8 per cent of total maritime freight traffic of the country in 2016-17. The growth in cargo handled by the non-major ports in 2016-17 was 4.1 per cent compared to 1.0 per cent decline recorded in the previous year. Gujarat accounted for 71.2 per cent of the traffic handled by non-major ports followed by Andhra Pradesh (14.3 per cent) and Maharashtra (7.2 per cent). These three maritime States, viz, Gujarat, Andhra Pradesh and Maharashtra together accounted more than 90 per cent of the total cargo traffic handled by the non-major ports over 2016-17.

Two commodities, viz. POL and Coal accounted for more than two-third of the total cargo handled

at the non-major ports in 2016-17. The growth of iron ore in 2016-17 was 86.7 per cent compared to 35.1 per cent in 2015-16. The POL, building materials and others commodities recorded growth of 2.9 per cent, 3.3 per cent and 13.0 per cent respectively in 2016-17. However, growth of coal and fertilizers and FRM products decreased 6.4 per cent and 27.8 per cent in 2016-17.

Ports in Kerala

The Ports of Kerala lie in the south west corner of the Indian peninsula. Kerala has a coastal length of 585 km and the State has an average width of about 60 km with one major port at Cochin and 17 non major ports. Out of 17 minor ports in Kerala, four are considered as intermediate ports based on berthing, cargo handling and storage facilities available in them. They are Vizhinjam, Beypore, Azheekal and Kollam ports. The remaining 13 minor ports in the State are Neendakara, Alappuzha, Valiyathura, Kayamkulam, Manakkodam, Munambam, Ponnani, Vadakara, Thalasserry, Manjeswaram, Neeleswaram, Kannur and Kasaragod.

Most of the minor and intermediate ports in

the State are seasonal in nature with insufficient infrastructure to handle even medium and small sized vessels throughout the year. Presently cargo operations take place only in four ports i.e. Vizhinjam, Beypore, Kollam and Azheekal. At Beypore, passenger traffic to Lakshadweep islands is also handled. At Thangassery (Kollam) new cargo port facilities are created utilising the calm fishery harbour basin.

The Government of Kerala has already decided to develop five non major ports through PPP mode. These Ports are Azheekal, Beypore, Ponnani, Alappuzha and Kollam. Apart from this a major port, Vizhinjam Deepwater International Container Transshipment Terminal is under construction.

Cargo Traffic in Cochin Port

In the case of Cochin Port, the total cargo traffic handled by the port in 2016-17 recorded an increase of 13.16 per cent to ₹250.07 lakh tonnes as against ₹220.98 lakh tonnes handled over the previous year.

Total import traffic handled in 2015-16 recorded an increase of 11.35 per cent to ₹202.48 lakh tonnes from ₹181.84 lakh tonnes in the preceding year. The major component of import include other cargo including POL (97.33 per cent) followed by fertilizers and raw materials (1.24 per cent), food grains (0.86 per cent), cashew nut (0.44 per cent) and iron steel and machinery (0.12 per cent).

Total export traffic handled during the year showed an increase of 21.59 per cent to ₹47.59 lakh tonnes from ₹39.14 lakh tonnes in the preceding year. The major components include other cargo including POL (88.29 per cent), coir products (4.43 per cent), sea food (3.42 per cent), tea (1.71 per cent), coffee (1.17 per cent), cashew kernals (0.81 per cent), spices (0.50 per cent).

(Source: Cochin Port Trust).

Cargo Traffic in Non-Major Ports of Kerala

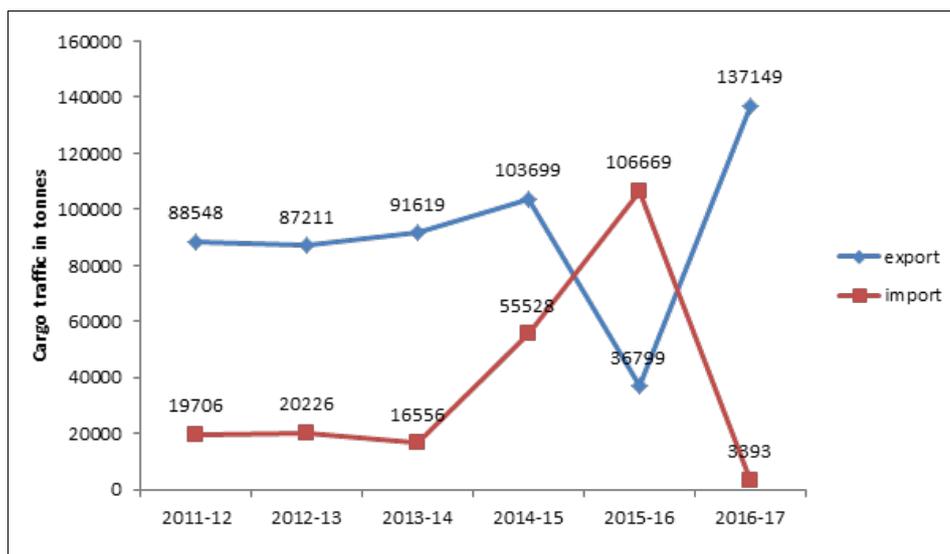
The cargo traffic in non-major ports of Kerala, declined 2.03 per cent at 14,0542.9 tonnes in 2016-17 as against 143,458.58 tonnes in 2015-16.

Cargo handling in 2016-17 was confined mainly to Beypore, Kollam, Vizhinjam and Azhikkal ports. The commodity handled in Vizhinjam and Beypore has increased by 20.78 per cent and 1.54 per cent whereas it has declined in Kollam and Azhikkal ports by 95 per cent and 38.34 per cent respectively. Details of commodities-wise cargo handled in minor and intermediate ports of Kerala (both coastal and foreign) are detailed in **Appendix 5.21**. In 2016-17, there were a total of 495 steamers and sailing vessels with registered tonnage of 140,542.93 called at non-major ports against 356 steamers and sailing vessels with 237,417.98 tonnages in the previous year. This shows a increase in number of vessels and decrease in tonnages. The details are shown in **Appendix 5.22**. Statement showing the revenue collection at the non-major ports during 2016-17 is given in **Appendix 5.23**.

The trend of cargo handled at non major ports of Kerala is given in **Figure 5.7**. Import has shown a fluctuating trend with a fall in 2011-12 and showed a growth of 2.63 per cent in 2012-13. It declined 18.14 per cent in 2013-14. 2014-15 and 2015-16 witnessed an increasing trend with 92 per cent increase in 2015-16. However import decreased drastically by 97 per cent in 2016-17 from the previous year. Exports declined in 2012-13 by 1.50 per cent then it improved by 5.05 per cent in 2013-14. In 2014-15, exports increased 13.18 per cent. In 2015-16 it had shown a drastic decline by 64.51 per cent but in 2016-17 it has increased 272.69 per cent.

The Government agencies involved in the development of ports in the State are Port Department, Harbour Engineering Department, and Hydrographic Survey Wing. The total budgeted outlay for the sector in the 11th Five-Year Plan

Figure 5.7
Trend of Cargo Handled at Minor Ports (Operable) of Kerala



Source: Directorate of Ports

was ₹51,463 lakh and expenditure ₹56,594.65 lakh (109.97 per cent). But during 12th Five-Year Plan total budgeted outlay for the sector was ₹70,027 lakh (36.07 per cent increase over 11th Five-Year Plan) out of which ₹78,063.62 lakh (111.48 per cent) is expended. The outlay and expenditure of the sector during the 12th Five-Year Plan and for the Annual Plan 2017-18 are given in **Table 5.11**.

Port Department

The port directorate is situated at Thiruvanthapuram. There are three regional port offices at Neendakara, Alappuzha and Kozhikode respectively. The Director of Port and port officers administer the port operations at all non major ports with the powers vested on them by Indian Port Act, 1950. The capital and maintenance dredging

Table 5.11
Outlay and Expenditure of the Sector in 12th Five-Year Plan and for the Annual Plan 2017-18

Departments	12th Five-Year Plan			Annual Plan 2017-18		
	Outlay	Expenditure	%	Outlay	Expenditure upto 9.10.2017	%
Port Dept.	59,849.00	74,104.41	123.83	11,786.00	10,027.57	85.08
Harbour Engg Dept.	6,710.00	2,453.84	36.56	1,465.00	43.67	2.98
Hydrographic Suvey wing	3,468.00	1,505.37	43.40	560.00	14.01	2.50
Total	70,027.00	78,063.62	111.48	13,811.00	10,085.25	**73.02

** The expenditure includes the expenditure of ₹10,000 lakh for Vizhinjam International Sea port Ltd for which the Outlay is only a token provision of ₹1 lakh.

Box 5.6**Major Achievements of the Port Sector in 2016-17**

- Commissioned a container handling crane at Azhikkal and Beypore Ports.
- Commissioned a 750 HP Tug at Azhikkal Port.
- Installed a pittance weighing machines at Vizhinjam and Azhikkal ports.
- Constructed office building at Alappuzha Port and compound wall at Azhikkal Port.
- Constructed Transit shed and extended Leeward wharf at Vizhinjam.
- Installed an electronic weigh bridge at Beypore.
- Construction of Passenger Terminal at Kollam port is progressing.
- Protection work of side wall at Valiyathura under progress.
- Constructed staff quarters and renovated signal station at Alappuzha.
- Construction of road from Kollam port to Kochupilammoodu is in progress.
- Renovated two existing godown at Valiyathura.
- Installed and commissioned solar panel at Alappuzha, O/o Senior Port Conservator, Beypore, Port Office, Thalassery.
- Kerala Maritime Institute at Kodungallur completed.
- The Kerala Maritime Bill passed which envisages development of minor ports, coastal shipping and navigation in the State. The board's objective includes coordination of the work connected with coastal development carried out by various departments and monitor maritime activities.

needed to maintain the required depth at the ports is another responsibility of the Port department. The port department is also responsible for search and rescue operation along Kerala Coast at times of distress.

Vizhinjam International Deep Water Multipurpose Seaport

The flagship project of the State, Vizhinjam International Deep-water Multipurpose Seaport is a landmark dream project that took off in 2015. This port is being developed as the transshipment hub to cater to large mother vessels. Vizhinjam is an all-weather port that will come up 10 to 12 nautical miles away from the Persian Gulf-Malacca lines. The proposed site has minimal maintenance dredging. With a draught of 18.20 m, this port can handle new generation mother vessels of size range 18,000 to 22,000 TEU.

The project is being developed on design, build, finance, operate and transfer (“DBFOT”) basis with

Adani Vizhinjam Port Private Limited (AVPPL) as the Concessionaire. The concessionaire would construct and operate the Port for a term of 40 years which include 4 years construction period.

The total cost of the project is ₹6,770 crore. Out of this ₹4,089 crore will be the contribution of the private partner, ₹1,463 crore will be put by State Government for ‘funded works’ of the project. The Central Government will provide ₹818 crore as viability gap funding (VGF) support and a balance of ₹817 crore will be provided by the State Government out of the total viability gap fund (VGF) of ₹1,635 crore sought for the project. The State would be providing land and developing external infrastructure such as water, power and rail connectivity. It's the first project in the State and first port in the country to receive VGF assistance from Ministry of Finance. The State government would get its portion of revenue, from non-port operations after 7 years of operation and from port operations after 15 years of operations.

Another novel feature of this project is the funded works component. Funded works are those components of the project where the private partner will carry out the work and the State Government that undertake the development will reimburse the cost of the same. The construction of breakwater (3.1 km), fish landing berth and buildings in fishing harbor and side development are the constituents of funded works on this project. The construction of breakwaters for the project would be an engineering feat in the maritime history of the country.

The port is primarily designed to cater to the transshipment and gateway container business of the region. The port will be developed in multiple phases. Phase-1 of the port will be developed over a period of 4 years and is envisioned to have the following:

- Breakwater of total length 3,100 m (main breakwater 2,960 metre with 140 metre extension for fish landing harbour).
- Container berth length of 800 metre capable of handling up to current largest 20,000 TEU container vessels.
- Container Handling/Berth Capacity of 1 Million TEU per Annum.
- Container yard with a width of up to 500 m.
- A fishing harbour for livelihood enhancement of local community.

Depending on the growth of the traffic, subsequent phases of the port are envisaged to be developed in the following manner:

Phase 2

- Construction of berth with length of 400 m
- Capacity enhancement to 1.5 Million TEU.
- Construction of Breakwater extension by a length of 200 m.

Phase 3

- Construction of berth with a length of 400 m
- Capacity enhancement to 2.2 Million TEU.
- Construction of Breakwater extension by a length of 720 m.

Phase 4

- Construction of berth with length of 400 m
- Capacity enhancement to 3.0 Million TEU.

Harbour Engineering Department

Harbour Engineering Department was formed in 1982 as a separate specialised service department for Fisheries and Ports. Government of India has empanelled Harbour Engineering Department of Kerala as a nation wide consultant in the coastal engineering field as well as a unique State Department in India. The major functions of the Department are investigation, planning, design, evaluation, execution, operation, maintenance, and management and related maritime engineering and technical works for the development schemes of the Fisheries and Port Department. During the 12th Five-Year Plan an amount of ₹6,710 lakh were allocated to this Department from which the expenditure was ₹2,453.84 lakh (36.56 per cent). The amount allotted in 2017-18 is ₹1,465 lakh.

Major Achievements of the Harbour Engineering Department in 2016-17

- Administrative sanction was accorded for strengthening and widening of road from Eravipuram Bridge to Mukkompozhi in Eravipuram LAC for ₹490 lakh.
- Administrative sanctions obtained to purchase survey instruments for investigation sub division and echo sounder for ₹135 lakh
- Ongoing construction of Type II quarters at Kamaleswaram.
- Rectification of damages to seaward breakwater at Vizhinjam.
- Procurement of computer and related accessories, modern software's advanced survey equipment such as total stations, GPS, photocopiers, public addressing system, local area network system etc.
- Installation of internet and networking facilities up to sub division offices.

Box 5.7**Latest Status of Vizhinjam International Deep Water Multi Purpose Sea Port**

The project has achieved physical progress as follows till date:

- The Appointed date for the project was. December 4, 2015 and the financial close was achieved on May 16, 2016.
- An area of 84.61 Hectares of land was licensed to the Concessionaire which is about 92 % of the land required to be licensed for the Project.
- Breakwater construction has progressed upto 565 metres out of a total length of 3100 metres.
- Dredging and reclamation is complete to the extent of 40 % out of a total area of 53 Hectares to be reclaimed.
- Construction of Berth was officially inaugurated by the Honourable Chief Minister on 01-06-2017 and the physical work is in progress.

Other activities which are in progress/achievements as on date are as follows:

- External Infrastructure - Water Supply:- Water Treatment Plant with a capacity of 3.3 mld was constructed for supplying water for Port activities as well as to the local people as part of social welfare measures undertaken by Government in April 2013. Currently purified drinking water is being supplied to local people as part of Social Welfare Measure.
- External Infrastructure - Power Supply: Laying of 11 kV (3 x 300 mm 2 UG Cable) in double run was completed from Poovar 33 kv sub-station. Construction of 220 kV power evacuation line is in progress from Kattakkada sub-station and Vizhinjam sub station.
- External Infrastructure – Rail Connectivity: Detailed Project Report for Rail Connectivity is prepared and submitted to Southern Railways for approval. Meanwhile the project is also being taken up with Ministry of Shipping to be covered under the Sagarmala Scheme of GOI.
- Acquisition of balance land required for Port Construction is in Progress.
- Government has provided 5 cents of land each to 88 families as rehabilitation who surrendered land with building besides compensation for land and building.
- Government is paying compensation to Project Affected People (PAP's). Rehabilitation and resettlement compensation were paid to a total of 124 shorescene, 252 lobster and 211 resort workers and were paid ₹22.16 crore. Document verification for rest of PAP's is in progress before LIAC Committee headed by the District Collector.

Hydrographic Survey Wing

The Hydrographic Survey Wing was constituted in 1968 as a part of the Kerala State Port Department for conducting hydrographic investigation which is required for the development of Ports. The Wing conducts pre and post dredging surveys and pre and post Monsoon surveys and undertakes Hydrographic Survey requirement of Harbour Engineering Department, Fisheries Department and other Government organisations. The wing

also furnishes hydrographic data as required by the National Hydrographic Office, Dehradun (Indian Navy) for updating their navigational chart.

The Chief Hydrographer is the head of the wing and is headquartered in Thiruvananthapuram. There are three regional offices; one each at Kollam, (Southern Range) and Bepore (Northern Range) and North Paravoor (Central Range). Kollam and Bepore offices are headed by Marine Surveyors and North Paravoor office is headed

by the Assistant Marine Surveyor. There is an Assistant Marine Surveyor's office at Neendakara which assists the Marine Surveyor, Kollam.

Major Achievements of Hydrographic Survey Wing in 2016-17

- The wing conducted 49 surveys in 2016-17. Digitisation works are almost completed. In
- addition to this, Mullperiyar reservoir survey for Forest Department and Kallarkutty Survey for Kerala State Marine Development Corporation was conducted.
- 4th batch of basic hydrographic course of 6 months duration conducted at Kerala Hydrographic Survey Centre. Short term course on total station started.
- One DGPS, Eco Sounder, Automatic Level and Computers purchased for Alappuzha sub office

Box 5.8

Way Forward - Recommendations of 13th Five-Year Plan Working Group Report on Port Sector

- Development of 7 ports during based on business models namely Vizhinjam, Kollam, Alappuzha (Marina), Kodungalloor, Ponnani, Beypore, and Azheekkal.
- Development of the ports of Kayamkulam and Munambam for Inland Cargo movement by providing facility for River Sea Operation.
- Provide dedicated passenger berths at Vizhinjam, Kollam, Munambam Beypore and Azheekkal ports (coastal shipping).
- Provide a dedicated passenger terminal at Beypore port for modern crafts and floating jetties and a passenger terminal at Vizhinjam port.
- Construct a new cargo Terminal at Azheekkal port for cargo port/passenger operation.
- Improve port connectivity at all non-major ports
- Extend the breakwaters at Beypore and Azheekal ports to increase the depth in the approach channel to 10 m.
- Construct Berth at Kayamkulam Harbour to ensure inland connectivity.
- Conduct capital dredging through Maritime Board and HED to increase the navigable depths in non-major ports to meet the requirements of development in non-major ports.
- Strengthening the existing cargo wharf at the main breakwaters of Vizhinjam
- Installation of petroleum storage facilities at Azheekkal and Kollam Ports and conducting special coastal transport services for petroleum products through PPP/Maritime Board/Private sector.
- Establishing EDI facility in Ports.
- Safety and Security in the operation including National Security in the Coastal Sector.
- Develop business models for each port.
- Kerala Maritime Board to be constituted.
- Refinement in the maritime education.
- Convergence of all concerned government departments/agencies in the State under the Maritime Board.
- Conducting appropriate training programmes in training institutes of ports department.
- Setting up port related industrial clusters for (1) marine products (2) electronic equipment (3) industrial parts (4) wooden furniture (5) steel products (6) ship building considering the specific nature of the hinterland.
- Industrial parks at Kollam, Beypore, Azheekkal, Ponnani ports for food processing plants, cashew products, and wooden furniture.

- Construction of office building at Thiruvananthapuram for Hydrographic Survey Wing Completed
- Construction of office building of Hydrographic Survey Wing for Munambam/Paravoor Sub Office completed
- Construction and extension of office building for Marine Surveyor office, Kollam completed.
- Construction of carshed for office building at Beypore completed.

The government has taken several initiatives to increase its investments in port sector by developing new ports, augmenting existing facilities, mechanising ports and improving connectivity and logistics. Despite these initiatives, Kerala's port sector has not been comparable with other ports either nationally or internationally. The challenges in the sector include inadequate road networks within the port area, inadequate cargo-handling equipment and machinery, inefficiency due to poor hinterland connectivity through rail, road, highways, coastal shipping and inland waterways, inadequate navigational aids, facilities and IT systems, insufficient dredging capacity, lack of technical expertise and a lack of equipment for handling large volumes. More focus should be given on expanding capacity and improving operational efficiency. The regulatory framework, comprising of many regulators and multiple legislations, is also complex and needs simplification to enhance integration and better co-ordination. The State should fully and consistently leverage benefits of port-led development of its coastline.

The marine sector is intricately linked to economic trade. The demand for its ports and trade infrastructure will continue to mount as trade diversifies and grows, making a compelling case for the rapid and efficient expansion of its port sector.

Inland Water Transport

Inland Water Transport (IWT) is a fuel efficient and eco friendly mode of transportation. IWT for passenger and freight movement reduces

operating costs and environmental pollution than road, rail or air counterparts. It could also relieve pressure on the other modes of transport. Basic infrastructure requirement for inland water transport comprises efficient navigation routes with navigation aids, terminals and jetties with adequate facilities to handle cargo and passengers and vessels suitable for various needs. The inland water transport in Kerala includes rivers and backwaters that historically played a major role in the transportation. Inland waterways have natural advantages compared to railways and roadways. There are 41 rivers in Kerala that flows westwards clubbed with numerous backwaters. It is the inland canals that connect the rivers to one another. Important places that hold commercial importance are situated on their banks. The total length of the inland waterways in the State is 1,687 km.

The main arterial waterway in the State is the West Coast Canal. The West Coast Canal connects the Hosdurg in the North to Thiruvananthapuram - Kovalam in the South running at about 590 km including the 47 km. uncut portion from Badakara to Valapattanam. The Inland Canal system (WCC) can play an important role in the economy of the State as they inter connect the rivers and backwaters. On the banks of this waterway, most of the commercial and industrial cities and tourism destinations are located giving a connection from interior places to the West Cost Canal system (WCC).

The WCC can be broadly divided into five sections as below.

1. Kovalam - Kollam – 74 km
2. Kottapuram - Kollam (N W III) – 168 km
3. Kottapuram - Kozhikode – 160 km
4. Kozhikkode - Neeleswaram – 188 km
5. Neeleswaram - Kasaragod – 41 km

The Central Government declared, a length of 168 km. of Waterway from Kollam to Kottapuram of West Coast Canal including 37 km length of Udyogmandal and Champakara Canals as National Waterway No.III with effect from 1993. As per the

National Waterway Act, 2016, the NWW III has been extended up to Kozhikkode.

The canals coming under National Waterway III are as follows:

1. Kollam- Kottapuram – 168 km
2. Kottapuram – Kozhikkode
(New extension) – 160 km
3. Udyogmandal Canal – 23 km
4. Champakara Canal – 14 km
5. Alappuzha – Changanacherry Canal
(New) – 28 km
6. Alappuzha-Kottayam-Athirampuzha
(New) – 38 km
7. Kottayam Vaikom canal (New) – 42 km

Present Scenario of WCC

The net work of canal system in Kerala has a total length of about 1,700 km and was developed a long time ago to meet the requirement of country boats. Most of these canals were silted up and suffer from many navigation constraints like shallow

depth and narrow width, bank erosion, absence of infrastructure facilities like jetties and terminals and navigation aids and needed development. National waterway-III between Kollam and Kottapuram and the feeder canals of Champakkara and Udyogmandal were developed in Class-3 standard. Passenger boat service is provided in Kollam, Alappuzha, Ernakulam, Kannur and Kasargod. Besides that various type of boats including house boats, shinkar boats, speed boats, etc. are plying in these canals and back waters for tourism. Jhankar service is provided at needed places. Systematic development of potential waterways in Class -3 standard is essential to achieve the goals in water transport sector including a modal shift of cargo transportation and tourism development. At the moment top priority is given to develop WCC by 2020 and the present status of various reaches of West Coast Canal are given in **Table 5.12**.

Government agencies engaged in the development of Inland Water Transport in the State are Coastal Shipping and Inland Navigation Department (CSIND), State Water Transport Department

Table 5.12
Present Status of Various Reaches of West Coast Canal

Sl. No	Reach of Canal	NW/KSW	Chainage (km)	Length (km)	Present Status
1	Kovalam – Akkulam	KSW	0 -16.04	16.04	Not navigable
2	Akkulam-Kollam	KSW	16.04 -74.14	58.10	Partially navigable
3	Kollam –Kottapuram	NW	74.14 - 242.14	168	Navigable
4	Kottapuram- Kozhikkode	NW	242.14 - 402.00	160	Partially navigable
5	Kozhikkode Town portion	KSW	402.14 - 412.00	9.86	Not navigable
6	Kozhikkode -Vadakara	KSW	412.00 - 450.08	40.08	Partially navigable
7	Vadakara-Mahe Uncut portion	KSW	450.08 - 467.69	17.61	Work in progress
8	Mahe-Valapattanam (26 km uncut portion and 32.20 km river portion)	KSW	467.69 - 526.20	58.51	Not navigable
9	Valapattanam-Neeleswaram	KSW	526.20 - 590	63.80	Navigable
10	Neeleswaram-Kasarkode Uncut portion	KSW	590 - 631	41	Under investigation

(NW-National waterway, KSW- Kerala State Waterway)

Table 5.13
Outlay and Expenditure of the Sector in the 12th Five-Year Plan and for the Annual Plan 2017-18

Departments	12th Five-Year Plan			Annual Plan 2017-18		
	Outlay	Expenditure	%	Outlay	Expenditure	%
CSIND	61744	13676.56	22.15	12785	72.39	0.57
SWTD	4854	2300.35	47.39	2200	193.06	8.78
KSINC	6002	2401.77	40.01	1322	0	0
TOTAL	72600	18378.68	25.31	16307	265.45	1.63

(SWTD) and Kerala Shipping and Inland Navigation Corporation Ltd. (KSINC). The total budgeted outlay for this sector in the 11th Plan was ₹45,888 lakh and expenditure ₹178,78.17 lakh (38.96 per cent). In the 12th Five-Year Plan, total budgeted outlay for the sector was ₹72,600 lakh (58.21 per cent increase over 11th Five-Year Plan) out of which an amount of ₹18,378.68 lakh (18.37 per cent) was expended. The outlay and expenditure of the sector during the 12th Five-Year Plan period and for the Annual Plan 2017-18 are given in **Table 5.13**.

Coastal Shipping and Inland Navigation Department

The main State inland canal schemes in the State are implemented through this department. In 2016-17, works related to Kollam Kovalam stretch, Kottappuram-Vadakara stretch, Vadakara-Mahe, Valapattanam- Neeleswaram, and construction of new jetties and cargo terminals were taken up. Under the 13th Finance Commission, project development of feeder canal connecting Kanneetti kayal at Karunagappally to National waterway, improvements to PC Canal from Andathodu to Ponnani from Ch: 310.18 to 321.556 km and Deepening and side protection to the Thanur-Koottayi Canal – Vettam to Poorapuzha have been completed. One reach of Vadakara-Mahe canal has been completed as per original agreement, other two reaches nearing completion. Development and revival of waterways from Anjengo kayal to Nadayara kayal in three reaches is progressing slowly. Under NABARD projects improvements to WCC to develop navigable waterway in Anjarakandi

river in Dharmadam and Pinarayi Panchayath, dredging the waterway in Valapattanam river, construction of two boat jetties at Randuthengu kadavu and Mouvel Thazhathu kadavu in Ramanthali panchayath, development of Beypore-Kallai canal, improvements to EK Canal have been completed in required reaches.

State Water Transport Department

The State Water Transport Department was formed in the year 1968, with its Head Quarters (Directorate) in Alappuzha. The Director is the Head of the Department. During formation, the service operation was only in the districts of Alappuzha, Kottayam and Kollam. The nerve centre of all the functions and activities back then was the Head at Alappuzha. Later the functions and activities were extended by establishing an office for the Mechanical Engineer and three Regional Offices in the districts of Ernakulam, Kottayam (Chaganacherry) and Kasargode, headed by three Senior Superintendents. Now the Department has fourteen Stations Offices.

The department caters to the traffic needs of the inhabitants in waterlogged areas for the districts of Alappuzha, Kottayam, Kollam, Ernakulam, Kannur and Kasargode. Even though it is a commercial department, it's functions are similar to a service department. Ever since 'transportation' came under "essential service", this Department has taken shape of an Essential Service Department.

The Department transports about 150 lakh of passengers per annum using wooden/steel and

Box 5.9
New Initiative in 2016-17
Formation of Special Purpose Vehicle for Facilitating the Timely Development
of Inland Waterways in Kerala

A Public Limited Company has been floated as a joint venture between the Government of Kerala and Cochin International Airport Limited.(CIAL) with 49 per cent Government of Kerala share, 49 per cent shares of CIAL and 2 per cent shares for others. This company would serve as the Special Purpose Vehicle for development of Inland Waterways, including uncut portions to be connected by canal systems, along the West Coast Canal not covered presently under National Waterways -3

The Chief Minister of Kerala shall be the Chairman of the new Public Limited Company.

The Managing Directors of the new Public Limited Company shall be appointed by the Board of Directors of CIAL. The maximum strength of the Board of the new Public Limited Company shall be limited to 12 to be nominated equally by Government of Kerala and CIAL.

SPV shall be responsible for the following activities.

Supervision of land acquisition for the development of the inland waterways to be carried out by the Inland Navigation Department, including undertaking social and environmental impact assessments as required under the LA Act and rehabilitation of project affected people. All construction and development work including widening of canals, construction of new canals, undertaking dredging works, disposal of dredged materials, de-silting bank protection etc. to conform to National Waterways Standards to facilitate passenger and bulk cargo movement, construction of roads, bridges walkways etc to achieve connectivity to the mainland.

Construction, operation and maintenance of terminal facilities, boat jetties, fuel facilities etc along the alignment of the waterways at designated locations Mobilising resources for execution of the inland waterways project. Promoting utilization of the existing National Waterways and the extension of the same to be undertaken under this project for passenger and bulk cargo movements..

fibre Glass Passenger Boats. Presently 51 schedules per day are operated including tourism services. Approximately 40,000 people use their service per day. Operates vehicle carrier (Two-wheeler) boats in ferry services. Operating distance per day is 700 km approximately.

Major Achievements of State Water Transport Department for 2016-17

- Construction of India's first solar boat completed and launched on January 2017 and Operating through Vaikom - Thavanakadavu

water way.

- Purchased LED Televisions for all major station offices and department boats.
- Payment up to 3rd stage of the work was settled for rescue boats.
- Purchased 39.39 m³ of timber logs from forest department for the execution of major repair work of old vessels.
- Renovation of Directorate SWTD toward FIT Ltd Aluva.
- Execution of major repair work for 3 vessels (S-22,S-16,S-14) completed

The details of operational statistics of State Water Transport Department are shown in **Appendix 5.24**.

Kerala Shipping and Inland Navigation Corporation Ltd.

The Corporation was formed in 1989 by the statutory amalgamation of Kerala Inland Navigation Corporation Ltd. (KINCO) and

Kerala Shipping Corporation Limited (KSC) both Government of Kerala Companies. KSINC is the pioneer in inland navigation, coastal shipping and water based tourism and leisure activities in Kerala. It started mechanised cargo transport in the inland waterways back in 1980's and started oil bunkering in the 1990s. It had also operated coastal shipping in 1999. Presently KSINC is engaged in cargo transportation, bunker supplies, tourism, construction and repair of vessels among

Box 5.10

Way Forward – Recommendations of the 13th Five-Year Plan Working Group on Inland Water Transport Sector

The recommendations for the 13th Five-Year Plan period are given below:

- A Comprehensive development master plan to be prepared for the development/classification and operation of State waterways and potential feeder routes correlating specific cargo oriented (O-D pair) study through agencies like NATPAC.
- For integrated IWT operation, State waterways and potential feeder canals to be identified, classified and developed facilitating movement of vessels of reasonable size/capacity based on the comprehensive master plan.
- Constitute Kerala State Maritime Board as the apex regulatory body bringing all the activities of IWT and coastal shipping under its regime.
- Constitute State and District Levels Monitoring Committees of representatives from Revenue department, IWAI, LSGD, CSIND/Irrigation Dept, people's representatives etc. to monitor and facilitate inland waterway development works.
- Pilot PPP projects for long term cargo/passenger movements in waterways.
- Integration of coastal shipping and inland waterways at feasible locations. Integration of Minor Ports with IWT under Sagarmala or other funding options.
- Development of tourism activities linking IWT.
- Subsidy schemes for building new IWT vessels.
- Viability Gap Funding for PPP projects.
- Legislation to be made for compulsory movement of hazardous cargo and certain percentage of bulk cargo by IWT mode, wherever feasible.
- A review study on the operation of Kerala Shipping and Inland Navigation Corporation (KSINC) to be carried out to make its service to optimum level.
- Government to incentivize setting up new industries along NWs/State waterways, preferably within a 2 km radius of IWT terminals.
- Central Government to be requested to extend NW-3 from Kozhikode to Kasaragod in the north and Kollam to Vizhinjam in the south.
- Model rules for construction of Inland Vessels (prepared by IWAI) and River Sea Vessels (prepared by DG (Shipping)) to be adopted and implemented in the State.

other services. KSINC is also operating a Slipway at Thoppumpady, Cochin, leased from the Cochin Port Trust since 1991. Apart from construction and repair of own vessels, the company is also executing construction and repair of vessels for various government agencies like State Water Transport Department, Port Department, Cochin Port Trust, Central Institute of Fisheries Department, Poompuhar Shipping corporation Ltd and other private agencies. So far KSINC has built and supplied nearly 50 vessels. Fort Queen, largest passenger boat under KIV Rules, built for Cochin Corporation, is the latest one.

The corporation at present has fleet strength of seven barges carrying various cargo, two tourist boats and two Jhankars. KSINC was the pioneer in transporting imported industrial fertilizer, raw materials such as Rock Phosphate, Sulphur and phosphoric acid to FACT, Cochin Division and Udyogmandal Division through waterways. KSINC now operates three cargo barges, four petroleum barges and one acid barge. They move an average of 1.50 lakh metric tonne cargo every year. KSINC employs around 150 persons including casual labourers. Turnover for the year 2016-17 was ₹13.00 crore. The company has been running at a loss for the last three years.

KSINC has launched Nefertiti on August 23, 2017 and Cleopatra, the fast ferry boat is ready for delivery, Orion, the 500 MT bulk barge is ready to commence service. The ferry terminal is also

ready for inauguration. The operational statistics of KSINC are also shown in **Appendix 5.24**.

Transport planning in India has failed to harness the enormous potential of water transport. Kerala is no exception. Steps to divert a part of cargo to IWT and thus decongest roads, reduce accidents, and substantially reduce the line, transportation and fuel cost has not succeeded. Steps were taken by Government to remove bottlenecks for dredging, widening and bank protection, improve the vertical and horizontal clearances at bridges/foot bridges, and remove and relocate fishing nets/stakes. Fiscal incentives like vessel building subsidy and loan interest subsidy were also introduced, but unfortunately short lived. Even after two decades, the waterway development remains incomplete. Targets in terms of fairway capacity, cargo, vessels and IWT operations have only declined. A silver-lining is the development of backwater tourism, which saw a quantum jump. Major bottlenecks encountered in implementation of schemes in NW-3 have been delays in land acquisition, difficulties in disposal of dredged material, delays in project execution, and poor fund utilisation. Efficient planning of fairway or the channel, terminals and inter-modal connectivity, vessels of optimum dimensions and utility and navigational aids for safe and a round the clock navigation are needed to make the IWT mode competitive. A balance is to be struck between what is on the ground and what is to be created.

ENERGY

Energy plays a vital role in the socio-economic development and human welfare of a State. An efficient, reliable and sustainable energy supply is a prerequisite for accelerating economic growth and human development. Apart from its contribution to economic development, it contributes significantly to revenue generation, employment,

enhancing the quality of life and reducing poverty. Making available the required quantity of power of acceptable quality at affordable price is one among the prime responsibilities of government. For any developing country, therefore, the strategy for energy development is an integral part of the overall economic strategy.

Power Sector in India

In India, electricity from thermal energy is the predominant source of power. It constitutes nearly 67 per cent of the total installed capacity of the country as on August 31, 2017. Contribution of electricity generation from different sources to the national grid, and the comparison to the previous years is given in **Table 5.14**. As per this, the total installed capacity for power generation in India is 3,29,226 mw. Of late, renewable sources have emerged as the second largest electricity source in the country leaving hydro to the third position.

In the sector-wise breakup of total energy generation as given in **Table 5.15**, the contribution of State sector is 81,652 mw (24.8 per cent), Central sector is 1,02,933 mw (31.3 per cent) and Private sector is 1,44,641 mw (43.9 per cent).

Power Sector in Kerala

Kerala generates power from four sources - hydel, thermal, wind and solar. Of these, hydel and thermal power generations account for the considerable majority whereas wind and solar power generations make only marginal additions. Monsoon is essential to sustain the hydropower base in the State and shortage in rainfall usually creates a power crisis. Yet hydel energy is the most reliable and dependable source of energy in Kerala.

Capacity Addition in 2016-17

Total installed capacity of power in the State as on March 2017 is 2,961.11 mw. Of which, hydel contributed the major share of 2,107.96 mw (71.19 per cent); while 718.46 mw was contributed by

Table 5.14
All India Installed Capacity as on August 31, 2017

Fuel	Installed Capacity (mw) as on 30.9.15	(%)	Installed Capacity (mw) as on 30.9.16	(%)	Installed Capacity (mw) as on 31.8.17	(%)
1	2	3	4	5	6	7
Thermal	194,200.00	69.68	213,228.90	69.60	219,490.00	66.67
Hydro	42,283.00	15.17	43,112.43	14.07	44,653.00	13.56
Nuclear	5,780.00	2.07	5,780.00	1.89	6,780.00	2.06
Renewable Sources	36,471.00	13.08	44,236.92	14.44	58,303.00	17.71
Total	278,734.00	100.00	306,358.25	100.00	329,226.00	100.00

Source: Central Electricity Authority (CEA)

Table 5.15
All India Installed Capacity as on August 31, 2017

Sector	Installed Capacity(mw)	Percentage (%)
State Sector	8,1652	24.8
Central Sector	102,933	31.3
Private Sector	144,641	43.9
Total	329,226	100

Source: : Central Electricity Authority (CEA)

Box 5.11
13th Five-Year Plan Approach – Power Sector

The details of the approach for the 13th Five-Year Plan are given below:

- i. During 13th Five-Year Plan, the aim is to develop domestic capacity for power generation through hydro, solar and wind projects.
- ii. Transmission and Distribution network, especially high voltage transmission lines to be strengthened significantly.
- iii. Electricity to all households.
- iv. During 13th Five-Year Plan, large scale solar power generation will expand substantially. Small scale generating capacity requires a paradigm shift from stand-alone to grid connected systems.
- v. The 13th Five-Year Plan will assist households that still depend on cooking stoves and fuel with substantial emissions to move to clean fuels.

Box 5.12
Kerala – Fully Electrified State

Kerala is always a role model for the rest of the States in the country when it comes to development and progress. Now Kerala has achieved a rare fete by providing electricity to all households. Kerala was declared as a fully electrified State on May 29, 2017 by providing connections to over 1.5 lakh applicants under the ambitious Total Electrification Scheme.

KSEBL has provided electricity connection to all families except 1000 families. This includes 150 families belonging to tribal communities living in dense forest areas. Pending court cases and denial of permission from the Forest Department was the reason behind this.

thermal projects, 59.27 mw from wind and 75.42 mw from solar. **Figure 5.8** highlights the total installed capacity of Kerala from hydel, thermal and renewable sources.

The total additional capacity added from all sources during 2016-17 was 55.03 mw and scheme wise addition details are presented in **Table 5.16**.

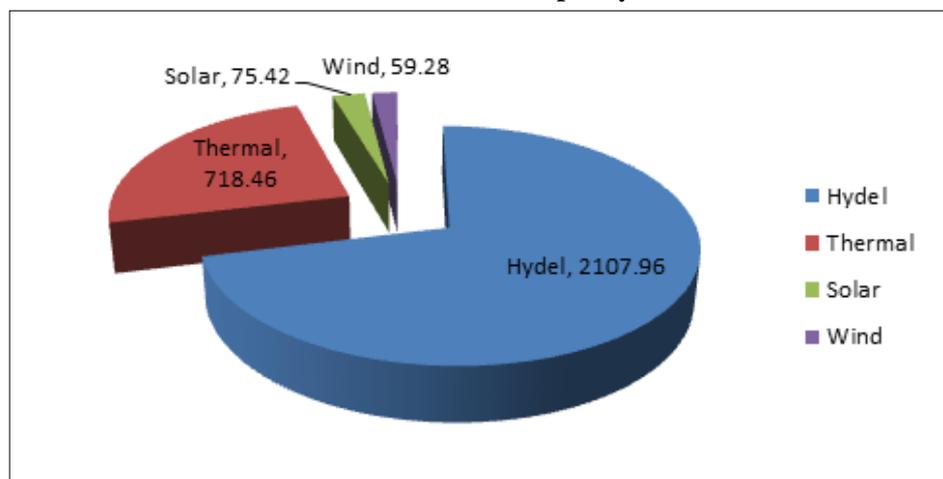
Appendix 5.25 shows the details of energy source and its installed capacity during the last five years while sector wise details are shown in **Appendix 5.26**. Of the total installed capacity of 2,961.11 mw during 2016-17, the contribution of State sector is 2,220.56 mw (74.99 per cent), Central sector 359.60 mw (12.14 per cent) and

Private sector 380.95 mw (12.87 per cent). The details of power availability during the last five years are shown in **Appendix 5.27**.

Kerala's Power Sector Projections

As per the 19th Electric Power Survey conducted by Central Electrical Authority, the projected energy consumption for the next 10 years for Kerala is 25,480 mu (million units, 1 unit=1 kwh) in 2017-18, 29,924 mu in 2020-21, 34,393 mu in 2023-24 and 38,756 mu in 2026-27. Over 10 years therefore Kerala's energy is estimated by this survey to increase by approximately 52 per cent above current consumption.

Figure 5.8
Total Installed Capacity



Source: KSEBL

Table 5.16
Capacity Addition, 2016-17

Sl No	Name of Power stations	Installed Capacity (mw)
1	Vellathooval	3.60
2	Solar KSEBL, Edayar	1.25
3	Solar KSEBL, Kollengode	1.00
4	Barapole solar canal bank KSEBL	3.00
5	Barapole solar canal top KSEBL	1.00
6	Anert. Kuzhalmandom	2.00
7	IWs RPCKL, Ambalathara Solar park	36.00
8	CIAL- additional	7.18
	Total	55.03

Source: : KSEBL

Performance of Power Sector Agencies

Power development activities in the State are carried out mainly through four agencies viz, Kerala State Electricity Board Limited (KSEBL), Agency for Non-conventional Energy and Rural Technology (ANERT), Electrical Inspectorate and Energy Management Centre (EMC). The outlay and expenditure of these departments for the 12th Five-Year Plan and Annual Plan 2017-18 are shown in **Table 5.17**.

In the Annual Plan 2017-18, the amount provided for the energy sector was ₹162,929 lakh. The total expenditure reported as on October 20, 2017 is 48.06 per cent. Out of this, ₹156,525 lakh is for Kerala State Electricity Board Ltd. (KSEBL), ₹4,830 lakh for Agency for Non-conventional Energy and Rural Technology (ANERT), ₹760 lakh for Meter Testing and Standards Laboratory (MTSL) and ₹814 lakh for Energy Management Centre (EMC). As per expenditure reported in the Plan Space, ₹78,299.17 lakh i.e. only 48.06 per cent of the total outlay is expended till October

Table 5.17
Outlay and Expenditure in the 12th Five-Year Plan and Annual Plan 2017-18 (₹ lakh)

Sl No	Name of the Department/ Agency	12th Five-Year Plan (2012-17)			Annual Plan 2017-18		
		Outlay	Expenditure	%	Outlay	Expenditure up to Oct 2017	%
1	KSEBL	658267	520999	79.15	156525.00	76522.29	48.89
2	ANERT	21154	7404	35.00	4830.00	1587.27	32.86
3	EMC	3074	2204	71.7	814.00	186.91	22.96
4	Electrical Inspectorate	2310	1715	74.24	760.00	2.70	0.35
	Total	684805	532323	77.73	162929.00	78299.17	48.06

Source: Plan space

2017. The expenditure reported by KSEBL is ₹76,522.29 lakh (48.89 per cent), ANERT is ₹1,587.27 lakh (32.86 per cent), EMC is ₹186.91 lakh (22.96 per cent) and Electrical Inspectorate is ₹2.70 lakh (0.35 per cent).

Kerala State Electricity Board Limited (KSEBL)

KSEBL is the driving force behind economic development of the State. It has been responsible for the generation, transmission and supply of electricity in the State, with particular mandate to provide electricity at affordable cost for domestic as well as for agricultural purposes.

In order to comply with the provisions of Electricity Act 2003 and the Government of India directives, the Kerala Government notified a transfer scheme vide GO (M.S) No. 37/2008/PD dated, 25.9.2008 through which all assets and liabilities of KSEB were vested with the State Government. The assets and liabilities were re-vested with fully owned government company, KSEB Limited under the Indian Companies Act, 1956 on 14th January 2011.

Generation

The electricity demand of the State is met through generation from KSEBL, Central Generating Stations (CGS), Independent Power Producers (IPPs) and Traders. KSEBL owns 35 hydroelectric

generating stations, 2 thermal power plants and 1 wind farm at Kanjikkode. An additional capacity of 55.03 MW has been added to the system during the year 2016-17 including IPPs thereby increasing the total installed capacity to 2,961.11 MW. Solar plants of capacity 6.19 MW were added to grid from LT/HT Prosumers. (Those consumers who are producers at the same time).

Ongoing Hydro Electric Projects in the State

The details of the ongoing hydro electric projects in the State with expected date of commissioning are given in **Table 5.18**.

The Table indicates that one project has been completed and only one project is expected to be completed in the year 2017-18. Details of other Hydro Electric Projects, which are in the pipeline, are given in **Appendix 5.28**.

Status of Ongoing Solar Projects

The details of the ongoing solar projects in the State and their present status are given in **Table 5.19**.

Solar Park

The Solar Energy Corporation of India (SECI) executed a Memorandum of Understanding with KSEBL on February 18, 2015 to develop

Table 5.18
Ongoing Hydro Electric Projects in the State

Sl No	Name of Scheme	Installed Capacity (MW)	Expected date of commissioning
1	Thottiar HEP	40	June 2020
2	Sengulam Augmentation Scheme	85 MU	June 2020
3	Chathankottunada II SHEP	6	Nov 2019
4	Kakkayam SHEP	3	Feb 2018
5	Perumthenaruvi SHEP	6	Commissioned (23.10.17)
6	Peringalkuthu SHEP	24	May-18
7	Bhoothathankettu SHEP	24	Dec-18
8	Upper Kallar	2	Aug-18
9	Pallivasal Extension	60	Dec 2020

Source: : KSEBL

Table.5.19
Ongoing Solar Projects in the State

Sl.No	Ongoing projects	Capacity in KW	Status
1	Ettumannoor	1,000	Work in progress
2	Muvattupuzha	1,250	Work in progress
3	Pothencode	2,000	Work in progress
4	Peerumed	500	Work in progress
5	Kuttiapuram	500	Work in progress
6	Ponnani	500	Work in progress
7	Nenmara	1,500	Work in progress
8	Kottiyam	500	Under tendering process
9	Mylatty	1,000	Under tendering process
10	Peruthenaruvi	450	Under tendering process
11	IPDS(South, Central and North)	1,120	Under tendering process
12	Distribution Roof Top Buildings	460	Work in progress and nearing completion
13	Transmission rooftop	910	Work in progress and nearing completion
14	5kw rooftop project in 8 schools	40	Under tendering process
15	Implementation of grid tied Roof Top Solar Projects for Government buildings under District Panchayat	1,285.5	Under tendering process
16	MadakkathraChoolissery	1,500	Re-tendering process

Source: : KSEBL

different types of solar power projects within and outside the State. The proposal for setting up of 200 MW Solar Park at Kasargode District had been given in-principle approval by Ministry of New and Renewable Energy (MNRE) on March 19, 2015. The Government of Kerala accorded sanction for setting up of 200 mw Solar Park at Ambalathara, Kinanoor, Karinthalam, Paivelikai and Meenja villages in Kasargode District. Government of Kerala had also accorded sanction for incorporation of a Joint Venture Company between Solar Energy Corporation of India and KSEBL namely Solar Power Park Developer (SPPD) for the implementation of the project in Kerala. SPPD was incorporated on January 1, 2016. Fifty per cent share capital of ₹50 lakh from KSEBL has been transferred to the Joint Venture Company. Out of the 200 mw, project of 50 mw has been awarded on October 29, 2015. Further, 50 mw capacity has been added to grid, out of which 14 mw was connected to grid during the current year. However, there has been a reduction in the total area (by 500 acres), which was envisaged for the park. This will have a corresponding capacity reduction in the total solar power generation envisaged from the project.

Pattern of Power Consumption

Kerala's consumption is predominantly domestic, which accounts for 51.18 per cent of the total consumption. Revenue from domestic consumers is only 35.82 per cent of the total revenue. The

number of domestic category consumers has increased by 2.70 per cent from 9,124,747 in 2015-16 to 9,371,285 in 2016-17. In 2016-17, a total of 20,087 mu of energy valued at ₹1,103,587 lakh was sold (internally) showing an increase of 762 mu as compared to the previous year's 19,325 mu. The details of consumption of electricity in Kerala during 2012-13 to 2016-17 are given in **Table 5.20** and the details of the pattern of power consumption and revenue collected in 2016-17 are furnished in **Appendix 5.29**.

As seen in the **Table 5.20**, the pattern of total consumption of electricity in Kerala has been fluctuating over the years.

Electrical Energy Consumption

In Kerala, electrical energy consumption has increased to 20,453 mu in 2016-17 from 19,325 mu in 2015-16 with a per cent increase of 5.84 per cent. Electrical Energy consumption in Kerala during 2012-13 to 2016-17 is depicted in **Figure 5.9**.

Projected Energy Consumption for the next 10 Years for Kerala

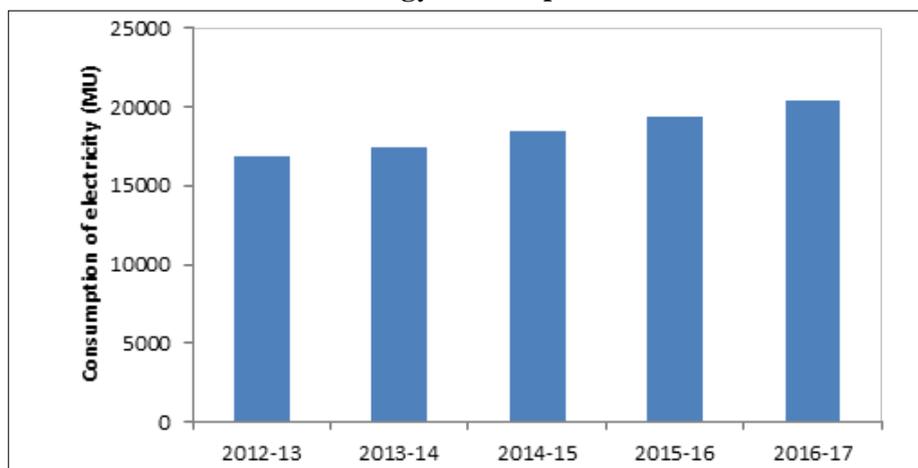
Table 5.21 shows the projected energy consumption of the State for the next 10 years. As per the 19th Electric Power Survey by Central Electricity Authority, there will be an increase of

Table 5.20
Consumption of Electricity in Kerala

Year	Total Consumption of Electricity (MU)	Growth Rate (in per cent)
1	2	3
2012-13	16,838	
2013-14	17,454	3.65
2014-15	18,426	5.57
2015-16	19,325	4.88
2016-17	20,453	5.84

Source : KSEBL

Figure 5.9
Electrical Energy Consumption in Kerala



Source: KSEBL

Table 5.21
Projected Energy Consumption for the Next 10 years for Kerala(in mu)

Particulars	2017-18	2020-21	2023-24	2026-27	Increase over 2017-18 (in per cent)
Domestic	11,123	13,098	15,293	17,805	60
Commercial	3,689	4,497	5,399	6,414	74
Industrial	4,344	4,715	5,086	5,450	25
Agricultural	313	339	365	391	25
Bulk Supply	1,380	1,601	1,839	2,086	51
Public lighting	428	513	605	703	64
Public Water Works	392	437	484	534	36
Railway Traction	231	260	292	335	45
Total	21,900	25,460	29,363	33,718	54

Source: : 19th Electric Power Survey by Central Electricity Authority

74 per cent in commercial consumption and 60 per cent increase in domestic consumption of Energy in the State by 2026-27.

Power Purchase Agreement (PPA)

KSEB has entered into PPAs with various Central Generating Stations of NTPC, Neyveli Lignite Corporation (NLC) etc. This includes purchase of 235.38 mw of power from nuclear power stations and 1245.77 mw of power from various thermal stations for 2016-17. As a measure to

encourage non-conventional sources of energy, KSEBL has executed PPAs for purchase of power from wind energy projects, Agali (18.60 mw) and Ramakkalmedu (14.25 mw) and from Small Hydro Projects Meenvallam (3 mw), Iruttukkanam (3 mw), Karikkayam (10.5 mw) Ullunkal (7 mw), Iruttukkanam (4.5 mw) and Mankulam Mini Hydro (0.11 mw). Power is also being purchased from co-generation plant of MPS steel (10 mw). The capacity allocated from various stations for which the PPAs have been executed is given in **Appendix 5.30**.

Box 5.13 Renewable Energy Plan

Under the Renewable Purchase Obligations (RPO) as part of the Tariff Policy issued by the Ministry of Power, it is mandatory for States to purchase a certain portion of their electricity needs from solar power plants. States can meet their RPO requirements through purchasing solar, wind or bio-gas generated power.

As per GOI's the new Tariff Policy, KSEBL has to source 14.25 per cent of the total consumption from Renewable Energy sources for 2017-18 of which, solar is to be 4.75 per cent and non-solar 9.5 per cent. In 2018-19, it will be 6.75 per cent solar and 10.25 per cent from Non-solar sources. However, grid can take only up to 20 per cent of the day time demand. So in 2017-18, the requirement is 878 million units of solar (525 mw@19 per cent CUF, and in 2018-19, 1,083 million units (650 mw @ 19 per cent CUF).

Transmission

Transmission of electricity means a bulk transfer of power over a long distance at high voltage, generally of 110 kv and above. A good transmission system is necessary for effective distribution and also for procurement of power from outside the State. In the transmission sector, many planned works could not be taken up due to land acquisition and right of way related issues. The commissioning of three 110 kv substations, seven 33 kv substations and 143.43 km of lines in the voltage levels above and including 33 kv, capacity addition of 498.8 mva including new substations are the achievements in the transmission side in 2016-17.

Details of Kerala's transmission system consisting of substations and its connected lines are given in **Appendix 5.31** and **Appendix 5.32**.

In the reporting period, the major development in the power scenario of the State especially in the transmission sector is that a long term transmission plan, Transgrid 2.0 has been formulated and approved by the Government including funding commitment. The preparation of a long term transmission plan Transgrid 2.0 is in line with the long term perspective transmission plan of CEA. The initiatives for the construction of a 2000 mw High Voltage Direct Current (HVDC) link

to Madakathara from Pugalur in Tamil Nadu as part of the planned HVDC link from Raigarh, in Chhattisgarh to Pugalur, for supporting the energy security of the State in the very near future and easing out the prevailing corridor congestion in the New Grid - SR region in general and S1-S2 area in particular was another important stepping stone. The work of Edamon Kochi Line which could be resumed clearing all hurdles after a gap of 19 Months was a significant development in the transmission sector.

Transgrid 2.0

Transgrid 2.0 aims at the long term stability of Kerala Grid so as to ensure quality and reliable power transmission in the State.

Government of Kerala has accorded administrative sanction for the Transgrid 2.0 project at an estimated cost of ₹6,375 crore over a period of five years. Transgrid 2.0 is planned to be executed mainly in two phases and the third component included is the 'Green Corridor' project which is eligible for financial support from GOI. The project has been approved for funding of ₹5,200 crore by KIIFB. Transgrid 2.0 will also be combined with Green Power Corridor Scheme which is being planned for the effective evacuation of power from renewable energy sources like solar and wind (**Table 5.22**).

Table 5.22
Transgrid 2.0 Project

Voltage	Substation Capacity	Lines in ctkms
400 kV	5	507
220 kV	24	1,965
110 kV		2,009

Source: : KSEBL

Aggregate Technical and Commercial (AT & C) Losses

In 2016-17, AT&C loss has increased to 16.30 per cent from 15.71 per cent and transmission and distribution (T&D) loss came down to 13.93 per cent. The corresponding data of AT&C loss for the country is 23.97 per cent. It means that KSEB has made significant achievement in the field of reducing AT&C loss. During the last few years, except in 2016-17, AT&C loss was considerably reduced by way of replacement of faulty meters, intensification of theft detection, installation of new substations and lines, up gradation and modernisation of sub transmission and distribution network through Accelerated Power Development Reforms Programme (APDRP). The impact of AT&C loss

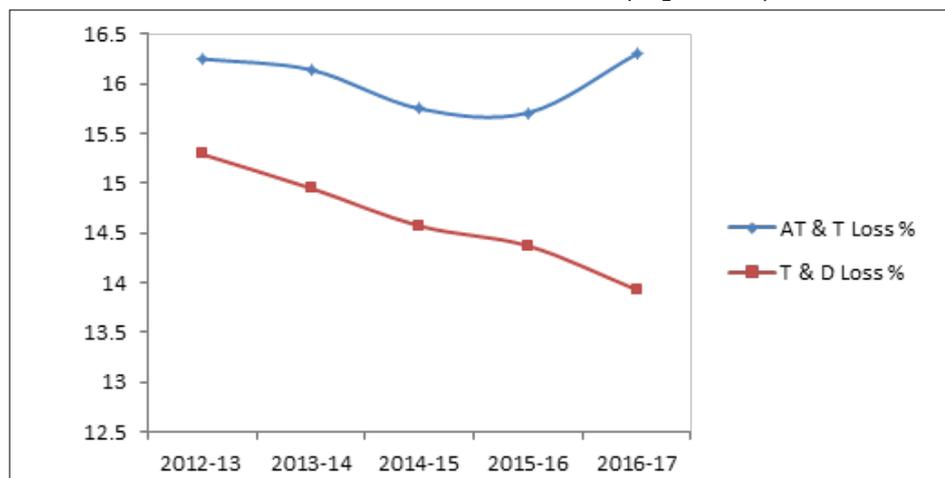
reduction during the last five years is shown in **Appendix 5.33**. (As the T&D losses was not able to capture all the losses in the network, concept of Aggregate AT&C losses was introduced. AT&C loss captures technical as well as commercial losses in the network and is a true indicator of total losses in the system). The trend of AT&C loss and T&D loss during the last 5 years is depicted in **Figure 5.10**.

T&D loss has come down marginally by 1.365 per cent from 2012-13 to 2016-17.

Distribution

In the distribution segment, there are 59,252 km of 11 kV lines, 277,422 km of LT lines and 75,579 distribution transformers. In the financial year

Figure 5.10
AT and C Loss and T and D Loss (in per cent)



Source: KSEBL

2016-17, a total of 462,237 service connections were given (against the target of 4,00,000), 1,844.4 km of 11 kV lines (against the target of 3050 km) and 5,356.71 km of LT line (against the target of 3,500 km) were commissioned. The target and achievement of the distribution infrastructure during 2016-17 are given in **Appendix 5.34**.

Restructured Accelerated Power Development and Reform Programme (R-APDRP)

The R-APDRP programme is sponsored by Government of India and funded through Power Finance Corporation (PFC). Part – A of the programme is for building up a solid IT infrastructure like data center, wide area network etc. for power utilities. The progress achieved in the implementation of the above project in KSEB is summarised as follows -

- 1.Data Center:** A full-fledged data centre has been setup in Vidyuthi Bhavanam, Thiruvananthapuram for hosting the software application of KSEB. The complete IT infrastructure includes servers, storage, networking and security systems.
- 2.Wide Area Network:** As part of establishment of Wide Area Network, about 680 Electrical Sections were connected to the data center through MPLS VPN network. Steps are being taken to connect the remaining electrical sections along with electrical circles and divisions to the data centre.
- 3.Centralised Customer Care Services (CCC):** Call centre cum customer care center has been setup in Vidyuthi Bhavanam, Thiruvananthapuram and it is functioning since 2014. Around 28 call centre executives work in the above facility to attend complaints/queries from the consumers under various electrical sections all over Kerala. During 2015-16, the incoming calls were 295023 and 248069 complaints were registered and attended

through CCC. About 680 electrical sections have been migrated to CCC for reporting/rectification of complaints. A cash deposit machine has been installed in CCC to provide facility for easy bill remittance for consumers. A corporate service centre is functioning at CCC to provide single window payment facility for bulk/corporate consumers.

- 4.Web Self Services:** This online portal provides facilities like e-payment, bill view, consumption pattern, meter reading history etc. 680 Electrical Sections are attached to the above website for providing consumer services.

Under R-APDRP Part-B, 43 schemes were sanctioned with an outlay of ₹1,078.3 crore. Works in 40 towns with a total outlay of ₹530.7 crore are being done departmentally. As on 31.3.2017, works amounting to ₹444.93 crore were completed. For the balance three schemes namely Thiruvananthapuram, Kozhikode and Kochi with a total outlay of ₹547.5 crore, work is being done on turnkey basis. As on 31.3.2017, works amounting to ₹456.16 crore were completed.

Major achievements of the scheme are; 5 new 33 kV Sub Stations completed, Additional Transformers installed in 4 existing Sub Stations, 19 km 33 kV OH Line constructed, 9 km 33 kV UG Cable laid, 1629 km HT OH line constructed, 1141 km HT UG Cable laid, 629 km HT re conductoring done, 89 km HT ABC installed, 2,846 distribution transformers installed, 270 km LT line constructed, 8,312 km of LT re-conductorng/conversion was done and 411 km LT ABC installed, 13,33,788 single/three phase faulty/mechanical meters replaced with electrostatic meters and 38,811 of street light meters installed.

Integrated Power Development Scheme (IPDS)

Integrated Power Development Scheme (IPDS) of Ministry of Power, Government of India aims at improving the distribution infrastructure of urban areas. The scheme includes construction of

33 kV and 66 kV substations, power transformers enhancement, R&M substations, New 66, 33 and 11 kV feeders, 11 KV line re conductoring, ABC Cables (HT<), New 11 KV UG Cables, Installation of DTRs, capacity enhancement of DTRs, HVDS, Metering and Solar Power Plants. An amount of ₹100.95 crore has been received under the scheme. Out of this, expenditure of ₹6.51 Crore has been incurred during 2016-17.

Deen Dayal Upadhyay Gram Jyoti Yojana (DDUGJY)

This is another programme launched by Ministry of Power for reducing AT&C loss, providing electricity to all households and for ensuring 24x7 power supply. Govt. of India has sanctioned an amount of ₹485.37 crore on January 5, 2016 for implementing DDUGJY in the 14 districts of Kerala. As per the scheme, 161,199 rural households are proposed to be electrified. Among these, 41,884 numbers belong to BPL category. Work includes construction of 33 kV Substations and 33 kV lines, 11 kV lines and LT lines, installation of distribution transformers, replacement of energy meters, effecting BPL service connections etc. An amount of ₹86.93 crore has been received for the scheme. Out of this, expenditure of ₹8.04 crore has been incurred during 2016-17. The ongoing RGGVY scheme is subsumed under this scheme.

The details of financial and physical progress of implementation of DDUGJY/RGGVY are shown in **Appendix 5.35**.

IT based initiatives of KSEBL

KSEB Limited has envisaged many IT based initiatives towards the objective of enhancing the quality of power distribution system and to address the concerns of the customers State wide. In alignment to this objective, two IT based initiatives have been developed and rolled out recently.

1. Urja Doothu, the Outage Management System.

This provides free information to the consumers via SMS about the outages due to planned shutdowns/breakdowns. The expected duration of the outages are informed to the customers in advance. Information about unexpected outages are also disseminated to the customers. Prior information of outages will help the customers to plan their activities accordingly. Information about unexpected outages will alleviate the confusion of customers during the outage. Launched on October 25, 2016, SMS triggered up to 2017 January is 4,872,093.

2. Urja Sowhrida, the Bill Information System.

This is to disseminate electricity bill information like bill amount, due date, disconnection date etc to the customers via SMS and e-mail. As soon as the bill is prepared in the Centralised Billing System, information like bill amount, due date, disconnection date etc is disseminated to the customers via SMS and e-mail. In order to aid the customers further, reminder SMS is sent before the disconnection date in case of non-payment. Timely intimation of bill information helps the customers to make prompt payments. Thus the last minute hustle on remitting the bill amount, disconnection of power supply and associated inconveniences etc are avoided. Reminder SMS before the disconnection date in case of non-payment is appreciated by the customers. Launched on October 25, 2016, SMS triggered upto January 2017 is 11, 62,201.

Demand Side Management Activities

Vigilance and Security Wing and Anti Power Theft Squad (APTS)

Vigilance Wing is constituted to effectively combat corruption and misconduct on the part of officers/ employees of KSEBL. Anti Power Theft Squad (APTS) is constituted under Inspector General of Police to detect pilferage and misuse of electricity all over the State of Kerala.

Achievements in 2016 -17

In 2016-17, total petitions received from various sources were 993. Out of 993 petitions, Vigilance Wing completed enquiry and submitted report on 714 cases.

In 2016 -17, Anti- Power Theft Squad (APTS) conducted 31,706 inspections all-over the State. Out of this, 194 cases of power theft were detected and a total assessment of ₹495,501,027 was made. In connection with the above, ₹220,890,875 could be realised from the erring consumers.

Achievements of KSEBL in 2016-17

1. Vellathooval SHEP (3.6 mw) commissioned.
2. 3 No's of 110 kV Substations and 7 No's of 33 kV substations were commissioned.
3. 73.96 ckt. km of 110 kV lines and 63.37 ckt. km of 33KV lines were added. Total transmission capacity added including new was 280.5 MVA
4. 46,2237 new service connections was given and 2,270 No's of new distribution transformers were installed.
5. 1,844 km of 11 kv line and 5357 km of LT line were constructed, completed Phase conversion of 2,281km and re-conductoring of 15,025 ckt. km.
6. 4,69,285 No's of faulty meters were replaced.
7. Solar Projects added - Kollengode substation (1 mw), Edayar substation (1.25 mw), Barapole canal top (3 mw), Barapole canal bank (1 mw), Padinjarethara dam top (440 kw), Gen.stations roof top (700 kw), others (65 kw).

Agency for Non-conventional Energy and Rural Technology (ANERT)

Agency for Non-conventional Energy and Rural Technology (ANERT) is an autonomous body under the Power Department, Government of Kerala. ANERT is the nodal agency for the implementation and propagation of non-conventional sources of energy in the State. It is also the Nodal Agency for the Ministry of New

and Renewable Energy Sources (MNRE), Govt. of India, to carry out the Central Government programmes in Kerala.

The programmes taken up by ANERT includes solar photovoltaic programmes, solar thermal programmes, wind energy programmes, biogas programmes, improved chulha programmes, publicity and awareness programmes. The assistance from Ministry of New and Renewable Energy (MNRE), Government of India is also available for these schemes based on MNRE guidelines. The outlay and expenditure of the ANERT is given in **Table 5.23**.

Achievements of ANERT

1. 2,197 biogas plants and 144 community chulha installed
2. Solar water heating systems of collector area 9,519 sq m has been installed. These solar water heating systems are capable for producing 630,000 litres of hot water per day.
3. 2,761 nos. of domestic chullah installed
4. 2 Solar power plant of 1 kw set up.
5. 2,316 Solar home lighting systems and equal number of Solar Lantern provided.
6. Off grid Solar smart programme 2016-17 - installed 664 nos of capacity - 1349 kw

Energy Management Centre (EMC)

Energy Management Centre (EMC) is the State designated agency of Bureau of Energy Efficiency, Ministry of Power, Government of India for promoting energy conservation, energy efficiency and enforcing Energy Conservation Act, 2001 in Kerala. EMC also promotes small/mini/micro hydel schemes. SHP Cell constituted by Government of Kerala under Power Department is also attached in EMC to give impetus for development of SHPs through Private Participation (**Table 5.24**).

Table 5.23
Outlay and Expenditure of ANERT (₹ in lakh)

Sl No	Schemes	12th Five-Year Plan (2012-17)			Annual Plan 2017-18		
		Outlay	Expenditure	%	Outlay	Expenditure	%
1	Programmes on Renewable Energy				3,065.00	313.76	10.24
2	Renewable Energy Public engagement, outreach, studies and development				1,765.00	108.91	6.17
3	Renewable Energy Programmes of ANERT	8,150.00	4,796.51	58.85		373.32	
4	Electrification Programme using Renewable Energy Sources	11,328.00	2,395.08	21.14		895.32	
5	Resource Assessment of Renewable Energy Sources	500.00	51.17	10.23			
6	Testing and Innovation, lab facilities and other Infrastructure	500.00	80.86	16.17			
7	Training, Extension and publicity	176.00	80.46	45.72			
8	Micro - Hydel Projects	250.00	0.00				
9	Wind Energy Projects	250.00	0.00				
	Total -ANERT	21,154.00	7,404.08	35.00	4,830.00	1,691.31	35.02

Achievements of Energy Management Centre

1. Energy conservation efforts in the State during the year 2016-17 saved 300 mu of electricity, 3,192 mt of oil and 4,100 mt of coal.
2. Conducted 29 energy conservation programme for Industries.
3. 1,020 Energy Conservation Programme for Educational Institutions.
4. As a part of the National Energy Conservation Day, Energy Conservation rally was conducted in 140 Centres, Public awareness campaign was conducted in 14 District headquarters, Energy Conservation Day celebrations and awareness campaigns was held at 19 PSUs
5. As a part of the Energy Clinic Programme, 700 women across 14 districts were given training and 1,081 Energy Clinics were conducted all over Kerala.
6. As a part of URJAKIRAN 2016-17, a total of 304 awareness programs were conducted covering all the 140 Constituencies in Kerala in association with NGOs.
7. 2278 awareness classes were taken by trained resource persons (RPs)
8. EMC participated/organised 12 exhibitions on energy conservation.

Table 5.24
Outlay and Expenditure of EMC (₹ in lakh)

Sl No	Schemes	12th Five-Year Plan (2012-17)			Annual Plan 2017-18		
		Outlay	Expenditure	%	Outlay	Expenditure	%
1	State Energy Conservation Awards	98.00	93.00	94.90	25.00	9.12	36.48
2	Energy Conservation Activities	670.00	658.97	98.35	345.00	104.81	30.38
3	Infrastructure Development and Institutional Strengthening	1,200.00	1,080.00	90.00	72.00	25.29	35.13
4	Kerala State Energy Conservation Fund	441.00	356.59	80.86	372.00	47.69	12.82
5	Safe disposal of CFL	25.00	15.00	60.00			
6	Small Hydro Power Development (RIDF)	640.00	0.00	0.00			
	Total - EMC	3,074.00	2,203.56	71.68	814.00	186.91	22.96

9. As a part of Smart Energy Programme, 4270 schools from 41 Educational Districts were enrolled with over 2 lakh students being part of the scheme. 41 Sensitisation camps, 37 Oorjolsavam competitions and 14 district level programs were conducted
10. Kerala State Students Energy Congress, 2017 was conducted for winners of District Level competitions at High School and Upper Primary level in 4 different competitions.
11. 3 R&D projects and 16 student projects on Energy Conservation and Management were provided financial and technical assistance.
12. 70 Schools in the State were made energy efficient by providing them equipment like 5 star rated ceiling fan, LED bulbs, T5 LED tubes etc.
13. Developed Energy Conservation Tip Sheet for ITI/Diploma students
14. EMC implemented 30 picohydel projects of 1 kw capacity at various remote locations in Kerala.
15. Hon. Chief Minister of Kerala inaugurated the 8 mw Pathamkayam Small Hydro Power Project, which was allotted under BOOT Scheme.
16. Chittainkara Panchayat in Ernakulam District becomes Energy Efficient Panchayat

17. EMC won the 3rd Best designated agency award, constituted by Ministry of Power, Government of India.

Department of Electrical Inspectorate

The Electrical Inspectorate is functioning under the Ministry of Power, Government of Kerala. Safety inspections are carried out and sanction for energisation for all HT/EHT and other medium voltage installation in the State are issued by this department. The motto of Meter Testing and Standards Laboratory (MTSL) is to provide testing and calibration of various types of electrical equipment. At present, calibration facilities is available for voltage, current, resistance, frequency, power, power factor and energy. The testing facilities include pre-commissioning tests for protection relays and instrument transformers. Also, pre-commissioning tests are conducted for power transformers, cables and circuit breakers. All calibrations and tests are conducted as per national and international standards. Enquiry of all electrical accidents occurring in the State and forwarding the enquiry report to the Government and taking actions against responsible person/ authority are also done by this department.

Table 5.25.

Table 5.25
Outlay and Expenditure of Electrical Inspectorate (₹ lakh)

Sl No	Schemes	12th Five-Year Plan (2012-17)			Annual Plan 2017-18		
		Outlay	Expenditure	%	Outlay	Expenditure	%
1	Meter Testing and Standards Laboratory (MTSL)	1,910.00	1,415.38	74.1	380.00	0.39	0.10
2	Effective Implementation of QCO	400.00	300.08	75.02	200.00	1.35	0.68
3	E- safe Kerala				180.00	0.95	0.53
	Total	2,310.00	1,715.46	74.26	760.00	2.69	0.35

Achievements of Electrical Inspectorate

1. Electrical Safety Awareness Programmes were organised extensively; which helped in reducing fatal electrical accident rate by 30 per cent.
2. National Board for Testing and Calibration Laboratories (NABL) for electro technical calibration is maintained in Meter Testing and Standards Laboratory, Thiruvananthapuram.
3. SEVOTHAM CERTIFICATION (Service Quality Management System Certification) as per I.S.15700 : 2005 from the Bureau of Indian Standards is maintained.
4. Effective implementation of Quality control order, 2003. Inspection and awareness among traders is done.
5. Construction of additional two floors in the existing Meter Testing and Standards Laboratory, Thiruvananthapuram incorporating accident prevention and monitoring cell.
6. Eleven Regional Meter Testing and Standards Laboratories have been started in the State.
7. Step has been taken for setting up of lab facility for testing of solar equipment for the effective implementation of Kerala Solar Policy, 2013.
8. Fully Automatic Energy Meter Test bench (Minimum 10 Position) of accuracy class 0.05 or better has been procured at Regional Testing

laboratories, Ernakulam and Kozhikode.

9. Compact System for testing LED has been procured.
10. Organised an International Conference on Electrical safety and conducted an Exhibition on Electrical Safety.
11. Online remittance of all fees (Inspection fee, duty fee, other fees) through E-Treasury portal has been started in all districts.

Kerala State Electricity Regulatory Commission (KSERC)

The Kerala State Electricity Regulatory Commission (KSERC), a statutory organisation of quasi-judicial nature, was established in 2002. The Commission has been taking all efforts to maintain a fair, transparent and objective regulatory system in the Power Sector of the State.

Important activities of the KSERC in 2016-17

In 2016-17, the Commission held 68 hearings for the disposal of the petitions filed before the Commission. In addition, the Commission held a number of routine internal meetings to transact business relating to administrative matters, framing

and finalisation of regulations, admission of petitions, ARR and ERC of the licensees and other matter related to the day to day functioning of the Commission.

During the period, Commission received 57 petitions related to the ARR and ERC and truing up of the KSEB and other licensees. The Commission issued orders on 51 petitions (including 29 pending petitions).

Consumer Grievance Redressal Forum (CGRF) has been established under the Electricity Act 2003, for the redressal of the grievances of the consumers. During the period, CGRF received 634 petitions and disposed 584 petitions (including 197 pending petitions).

Electricity Ombudsman is a statutory authority appointed by the KSERC to redress the grievance of consumers aggrieved by non-redress of grievance by the Consumer Grievance Redressal Forum. During the period, Ombudsman has received 103 petitions and disposed 136 petitions (including 61 pending petitions).

The following regulations were published in 2017-18.

1. Kerala Electricity Supply Code (Removal of difficulties) dated October 26, 2016

2. Kerala Electricity Supply Code (Amendment) dated January 24, 2017
3. KSERC (Terms and Conditions of Determination of Tariff amendment regulations 2017) dated March 20, 2017
4. KSERC (Conduct of Business amendment regulations 2017) dated July 26, 2017.

Way Forward

The State needs to overcome many challenges in the coming years. A significant one is the need to ramp up the shift to energy from renewable energy sources in accordance with Central government policies. Other challenges ensue from a steady transformation of the structure of the power sector brought about by changes in the regulatory regime at the national and State level. Such changes are challenging especially in the context of the State's vision of keeping all aspects of the power sector predominantly in the public sector and the State's overall vision of inclusive growth and development.

Conclusion

As a part of transforming Kerala into a power sufficient State, conscious effort is evidently necessary on the part of the power sector

Box No 5.14

13th Five-Year Plan - Constitution of Working Group on Energy

In connection with the preparation of 13th Five-Year Plan for the State, Working Group on Energy was reconstituted with Sri. Paul Antony IAS, (Additional Chief Secretary to Government, Department of Power) and Sri Prabir Purkayastha (President Centre for Technology and Development, New Delhi/Chairperson Knowledge commons), as Co-Chair. The committee had eminent experts from various areas related to energy. The major recommendations of the Report are as follows:

1. Generation

The existing demand and the Projected Demand are 4200 mw and 5400 mw respectively. To meet this, targets from hydro including small and mini is 300 mw, Solar-Grid connected is 600 mw, Roof top Solar is 500 mw and Wind is 100 mw.

2. Distribution

100 per cent Electrification, a target of 18,000 km of 11 kV Lines during next Five-Year Plan, i.e., 3,600 km/year, Reconstruction (10,000 km of old 11 kV lines), New constructions (3,000 km) and construction of 5000 km of new 11 kV lines.

3. Transmission

New substations and transmission lines proposed are: Three 400 kV new substations at (1) Neeleswaram, Mylaty, (2*500 MVA), (2) Kottayam, Ettumanoor (2*315 MVA) and (3) Kollam, Kundara (2*315 MVA), capacity addition of transformer (1*315) in Kozhikode 400 kV substation and HVDC 2000 MW Madakatara by PGCIL and long term transmission plan Transgrid 2.0. Target of AT&C loss is 10 per cent

4. Other Recommendations:

- i) Small wind turbines to be used on an experimental basis to test their feasibility.
- ii) Policies and institutional arrangements to be designed to induct large scale solar energy into the system or as stand alone systems.
- iii) Government buildings, including local body head quarters, schools and colleges, to be equipped with roof top Solar PV systems.
- iv) An aggressive plan for building pumped storage to be taken up to provide the necessary flexibility.
- v) Smokeless chulhas, biogas plants etc to be encouraged to provide more efficient combustion and therefore less damage to the health of the people, particularly women.
- vi) Focus on energy conservation and electrical safety.

agencies. Electricity generation from wind, solar photovoltaic, small and medium hydro projects should be encouraged. There is also a need to improve the performance of power sector agencies by formulating and implementing innovative schemes which will attract more capital inflows and more useful projects in the sector. An integrated approach involving institutional changes, increased generation capacity, increased production of renewable energy, demand side management and energy conservation activities are needed in the future, along with a vision of a leading, yet facilitative, role for the public sector in this sector.

COMMUNICATION

Postal Network of Kerala

Indian postal system is the largest in the World with a network of about 1.55 lakh Post Offices, of which 1.39 lakh (89.78 per cent) are in rural areas and 15,826 (10.22 per cent) in urban areas of the country. The postal network consists of four categories of post offices namely, Head Post Offices, sub Post Offices, extra departmental sub Post Offices and extra departmental Branch Post Offices.

Kerala Postal circle includes the entire State of Kerala, the Union Territory of Lakshadweep and Mahe under the Union Territory of Puducherry. Kerala is the only postal circle where every village has at least one post office. As of August 31, 2017, there are 5,065 post offices in the circle, of which 1,457 are Departmental post offices and 3,557 Extra Departmental post offices. On average each post office in the State serves an area of 7.69 sq. km and a population of 6,610 as against the national average of 21.21 sq. km and a population of 7,175 people. In total, 83 per cent of the post offices are located in rural areas. Major Activities of Kerala Postal Circle is given in **Box 5.15**.

As a result of these initiatives, Post Offices in Kerala have improved their functioning as a citizen hub. Every citizen now has access to this hub close to his/her doorstep. Details are shown in **Appendices 5.36, 5.37, 5.38, and 5.39**.

Telecommunications

Telecommunication is one of the prime support services needed for rapid growth and modernisation of the economy. The

telecommunication service in India has improved significantly since independence. Kerala telecom circles serve the whole of Kerala State, the Union Territory of Lakshadweep and part of Union Territory of Puducherry (Mahe). The circle has 11 major Secondary Switching Areas (SSAs) and one minor SSA of Lakshadweep. The status of telecom sector in Kerala is given in **Box 5.16**. More details are given in **Appendix 5.40**.

Communication Infrastructure

Core infrastructure for e-governance in the State consists of Kerala State Wide Area Network (KSWAN), Secretariat Wide Area Network, State Data Centre, State Service Delivery Gateway and public WiFi project. KSWAN is the backbone of the State Information Infrastructure (SII), connecting Thiruvananthapuram, Kochi and Kozhikode and extending to 14 districts and 152 block Panchayats of the State. The Network will also connect 3,500 offices of government departments through wireless and a large number through leased lines and Local Area Network. KSWAN is seamlessly integrated with two State Data Centres which enable the network to provide large number of government to government, government to citizens' services hosted in State Data Centres to the government institutions through a secure intranet.

New Initiative 2017

Government of Kerala has announced setting up of State's own communication infrastructure, namely K-FON, Kerala Fibre Optic Network in the State, to enhance communication in rural areas, provide high speed connectivity to all government and educational institutions and offer internet to the economically backward community of the

Box 5.15**Major Activities of Kerala Postal Circle**

- All the 1508 departmental post offices in the Circle are computerised and provided (e Money Order) eMO services.
- Introduction of the facility to register the complaints on the web and track the progress till it is finally settled.
- New e-based and value added services introduced.
- The track and trace facility available for registered, insured, speed post, eMO and foreign accountable articles is availed through the www.indiapost.gov.in and enables the customers to track their articles right from the time of booking to the time of delivery.
- Introduction of International Speed Post or EMS - a facility available from India to 99 countries.
- Pack Post Service – effective way to send items up to 30 Kg anywhere in the world is available at Thiruvananthapuram GPO.
- World Net Express Service (WNX) is introduced to connect 220 countries
- Two new parcel products of India “Express Parcel” and “Business Parcel” introduced
- Introduction of Logistics Post Air to the customers for getting end to end services on the logistics value for faster transmission/delivery of their consignments
- 1498 Post Offices (51 Head Offices and 1447 Sub Offices) in the State have been shifted to the Core Banking System
- Introduction of “My Stamp” – any individual can get their personalized stamps with their photograph on it.
- Implementation of Public Fund Monitoring System (PFMS) or NeFMS platform for effective wage disbursal under MGNREGS.
- Tie up with Kerala State Government for Corporate e-post
 - i. Tie up with Commissioner for Entrance Exam for selling Application forms under Retail post
 - ii. Tie up with Director, LBS Centre for Science and Technology
 - iii. Kerala Water Authority under e-payment
 - iv. BSNL under e-payment
 - v. Tie up with Local Self Government for tax collection
 - vi. Tie up with Kerala Books and Publication Society (KBPS), for distribution of text books to schools throughout the State for the academic year 2016-17
 - vii. Sale of Penta Mobile through Post Offices (e-payment)
 - viii Booking of railway reservation ticket under Passenger Reservation System (PRS facility)

Box 5.16**Status of Telecom Sector in Kerala as on March 31, 2017**

• No. of Telephone Exchanges	:	1,306
• Equipped Capacity	:	3,328,931
• Working Connections	:	1,962,592
• Average No. of Telephone per sq. km	:	61.41
• Telephone Density	:	70.235 per thousand population

State. The universal basic internet facility will be made available to all citizens and government machinery through a new optic fibre pathway created in parallel to KSEB electric power

network. Administrative sanction was accorded for ₹1,028.20 crore and Detailed Project Report has been approved by Kerala Infrastructure Investment Fund Board (KIIFB) for ₹823.00 crore.

SPORTS AND YOUTH AFFAIRS

The development of sports is closely associated with economic and social progress of a State. In terms of social progress, active participation in sports improves community health and productivity, reduces medical expenses, imbibes discipline in character and enhances social cohesion. Economically, organising major sporting events helps to develop infrastructure, generate employment and revenue and facilitates economic activity. Kerala is known beyond the nation's boundaries for its sporting culture. The State has nurtured some of the most eminent sports persons India has produced. Further, Kerala's talented men and women have donned Indian colours many times, doing the country proud in the international sports arena and symbolising the latent talent among the populace of the State for sports and games. The core responsibility of the Government is to ensure the promotion and development of sports and games in the State, co-ordinate all sports activities of the State and ensure mass participation in sports and games especially rural sports persons to utilise the available talent and potential. In addition to this, providing suitable infrastructure involving agencies like Local Self Governments, educational institutions, voluntary organisations and people's representatives is also required.

The positive attitude and the passion currently exhibited by the Government in boosting sports activities in the State increases the responsibility of the department necessitating its involvement at regional, district and sub district level trickling down to the grass root level viz. Grama Panchayat.

This essentially calls for strengthening the existing administrative machinery of the departments.

Directorate of Sports and Youth Affairs

The Directorate of Sports and Youth Affairs was established in the year 1986 for the promotion and development of Sports and Games in the State by encouraging sports activities at the grass root level itself thereby ensuring mass participation and national and international laurels for sporting excellence. Based on the recommendation of Kerala State Sports Commission, the Directorate of Sports has set up a Sports Development Fund Trust with the aim of mobilising funds from various sources including private sector in addition to Government funding for development of sports in the State. There are various activities undertaken by the Directorate. Every year, financial assistance is provided to selected institutions/individuals for procurement of sports equipment/conduct of competition and coaching camp. Rajiv Gandhi Sports Medicine Centre functioning under the Directorate of Sports and Youth Affairs provides scientific and prompt medical assistance and rehabilitation therapy to sports persons. Play for Health programme is implemented in schools for developing sports from the primary school level itself. Swim N Survive is another programme for developing minimum skills needed in case of emergency. The administration of G.V. Raja Sports school is vested with the Directorate of Sports and Youth Affairs. The Sports Engineering Wing is functioning for various infrastructure development schemes throughout the State. In

order to lead a healthy life and reduce instance of lifestyle diseases, community sports programme is functioning State wide. Suitable areas are being developed as multi sports play spaces for multi-sports usage including volleyball, basketball, tennis and other minor games using modern synthetic surfaces.

As part of development of sports infrastructure the following facilities are being developed throughout the State.

- Swimming pool using modern technology
- Long jump and triple jump pit with synthetic run up
- Four lane straight running track
- High jump run up and landing pits
- Kabaddi floor, synthetic football turf, shuttle badminton court
- Miniature sports park for children
- Futsal and maple wood flooring

Kerala State Sports Council

Kerala State Sports Council is a statutory body formed as per Kerala Sports Act 2000 (Act 2 of 2001). Kerala State Sports Council was established in 1954 under Charitable Societies Registration Act and reconstituted in 1974 for promoting sports in Kerala under the name of Kerala Sports Council. The Kerala Sports Council was dissolved and Kerala State Sports Council came into existence and is at present functioning as per Kerala Sports Act 2000 and Kerala Sports Rules 2008. There are 25 centralised sports hostels, 53 college sports hostels and 43 school sports hostels functioning under Kerala State Sports Council. Different training schemes in various disciplines are also being conducted.

Operation Olympia -2024

Operation Olympia 2024 envisages grooming of 250 top and elite potential sports person from 11 sports disciplines across the State and train them with state-of-the-art infrastructure

and training facility including services of foreign coaches, exposure in international events etc. The focused disciplines are Sprints, Middle distance jumps events, Women Boxing, Women Wrestling, Shooting, Archery, Canoeing and Kayaking, Rowing, Fencing, Badminton, Cycling and Swimming.

Kayika Kshmatha Mission

Kerala, the first State to achieve 100 per cent literacy, now is on an ambitious endeavour to become the first State in the country to achieve 100 per cent physical literacy and physical fitness through Kayika Kshmatha Mission. As part of phase 1 of the project, overall fitness of the students in the school was assessed. In the assessment it was found that fitness level of most of the students in schools was below desirable fitness level. Hence the phase 2 of the Kayika Kshmatha Mission envisages the improvement of physical fitness level of the students as well as the general public and also creating awareness about physical literacy. For the programme the entire population of the State will be categorised into four, for the ease of implementation and monitoring. They are

- Nursery to 4th standard students
- 5th standard to plus two and university students
- Youth and working professionals
- Senior citizens

This programme will be implemented with the collaboration of various departments viz. Kerala State Sports Council, Department of Education, Department of Local Self Government.

Youth Affairs

Youth represents the hope and future of a country. They have a vital role to play in fostering and strengthening social consciousness against all social evils and lead the country to unity and prosperity. The immense resources of youth, if galvanised, can work as a major force for socio-economic change. Focus on youth is needed to create increasing opportunities for the youth to

Box 5.17
Approach to the 13th Five-Year Plan

- The prime objective of the 13th Five-Year Plan will be on creation of vibrant culture of sports in Kerala. Sports persons will be encouraged to participate in competitive and high-performance events. The culture of sports in the State will be based on the achievements of social goals of good health, cultural well being, broad-based recreational facilities, and social inclusiveness.
- The 13th Five-Year Plan will provide for three types of intervention in sports. First, the Plan will provide for integrating physical education into curricular educational institutions, and will upgrade sports hostels and training institutes. Secondly, the Plan will increase funds for modern infrastructure in sports, including stadiums, equipment, and other material and for the upkeep and maintenance of existing infrastructure in sports. Thirdly, the Plan will attempt to popularise sports on a mass scale in the State. The Plan will also make special efforts to encourage sports for the persons with disabilities.
- The Directorate of Sports and the Kerala State Sports Council are the two leading institutions in the sports sector in Kerala. Currently, the activities of the two overlap. The 13th Five-Year Plan will attempt to restore each to its original functions, with the Directorate in charge of creation of infrastructure and procurement of equipment, and the Council in charge of ensuring that the aims of the sports policy are realised.

develop their personality, their functional capacity and also to preserve their legitimate rights, avoiding any possible exploitation.

Kerala State Youth Commission

Kerala State Youth Commission was formed for the purpose of evolving and implementing programs for educating and empowering the youth and to function as a protector of their rights. It is a quasi-judicial institution, which started functioning through ordinance promulgated by government. The Commission intends to undertake various programmes for the 13th Five Year Plan. Empowering the youth and make them aware of their duties and responsibilities for avoiding communalism, alcohols, drugs and cyber crime are the focus areas.

Kerala State Youth Welfare Board

Kerala State Youth Welfare Board is an autonomous body incorporated under the auspice of Government of Kerala in 1985. The main objective of the Board is to co-ordinate youth

welfare and development activities. The Board consists of 21 members of whom there are 11 ex-officio members and 10 members are nominated by the Government.

Keralotsavam

Keralotsavam, a unique youth festival, is conducted mainly for the youth who have no proper platform to present their cultural and physical talents. In this festival youth in the age group of 15-35 can participate in cultural, arts and sports competitions in Block, District level to State level. There are some selected cultural items, which are not popular in mainstream cultural scene, included in this festival.

Keralotsavam is now a widely accepted festival for the youth of Kerala. As a result every youth in this State is getting a chance to project him/her self to the fore-front in every sphere of life. Kerala has created a model for the nation by initiating a colourful youth festival “Keralotsavam,” which is conducted with gaiety and fanfare every year.

Yuva Sakthi

Yuva Sakthi is a project initiated by the Kerala Youth Welfare Board for tapping the potential of youth in Kerala. The new project, being implemented in association with Local Self-Governments will institute coordination committees at the Panchayat and municipality level. 100 Village Panchayats and five Municipalities of the District would benefit from the scheme. This project would help strengthen government aided youth activities under various local self-government bodies. The coordination committee comprises 11 members including three subject experts. A youth co-ordinator will also be selected from each of these local self government institutions. Yuva Sakthi will enlist the help of registered youth clubs and associations to bolster up its activities.

Yuva Karma Sena

The main objective of this scheme is to channelise 'Youth resources for Rural Development'. There are thousands of Rural Youth who are willing to do any service on a voluntary basis. 152 blocks in the State can be chosen for mobilising these invaluable youth resources and the Block Youth co-ordinator will be entrusted the responsibility of each block Youth Community. Besides, 50

dedicated Youth Volunteers will be selected in each block and they will be provided a two-day intensive training on disaster management, first aid, and community work, etc. These volunteers will be provided with a resource kit and an identity card. Thus the service of 7,600 trained youth volunteers can be ensured throughout the State. The service of these volunteers will be a great blessing in time of natural calamities, unexpected accidents, riots, etc.

The Youth Clubs will have to play a vital role in organising various awareness programmes, environmental awareness, social forestry programmes and form Nature Clubs at local levels.

HIV/AIDS Prevention Programme

Several steps have been taken by the Government for the prevention and awareness of HIV/AIDS. As the Youth Welfare Board envisages a network of action throughout the State/District Youth Centres, besides forming Youth Clubs at grass root levels, it can function effectively in combating this dreadful disease. The activities will be done in collaboration with National AIDS Control Organisation (NACO), UNAIDS, State AIDS Cell and other Voluntary Organisations.

Box 5.18

Approach to the 13th Five-Year Plan

- In Kerala, the population between the age of 18 and 39 are defined as youth. Employment generation for youth is a major objective of the 13th Plan. This Plan will attempt to attract youth into agriculture by making agriculture economically rewarding and intellectually stimulating. Rural economic activities need modernisation and technical change to ensure the elimination of drudgery; only then can we expect youth to stay back in the rural areas. The 13th Five-Year Plan will also expand programmes to develop skills for youth, in order to shape them to be potential workers in modern workspaces, globally and domestically.
- The 13th Five-Year Plan will assist programmes to help reinforce the secular character and scientific temper of Kerala's youth. Kerala also needs mass campaigns to ensure gender justice and freedom for women; the Plan will support programmes that focus on the youth in this respect.

Adventure activities

Government of India provides support to youth adventure activities through State Governments. The Kerala State Youth Welfare Board also gives support to the youth adventure training program, which is intended to infuse the spirit of adventure among the youth. It is clearly evident that the youth

of Kerala are brim with the spirit of adventure as there are greater number of entries for the bravery awards from Kerala. The third National Adventure Academy has been established at Devikulam, Munnar in Idukki district and the Academy conducts a adventure training programme such as paragliding, mountaineering, and trekking etc.

KERALA INFRASTRUCTURE INVESTMENT FUND BOARD

The Kerala Infrastructure Investment Fund Board (KIIFB) came into existence on November 11, 1999 under the Kerala Infrastructure Investment Fund Act 1999 to manage the Kerala Infrastructure Investment Fund. The original Board was chaired by the Chief Secretary, Government of Kerala with Secretaries of key government departments and two financial experts as Members. Secretary to Government (Finance-Resources) was the Fund Manager. Now the KIIF Act has been comprehensively revised through the Kerala

Infrastructure Investment Fund (Amendment) Act 2016 and the structure of KIIFB has been modified to make it a powerful body functioning as the key arm of Government for large scale infrastructure investment in the State. Besides enabling various modes of financial support to projects, the amendment also provides for utilising the new infrastructure fund mobilisation structures approved by SEBI and RBI. As per the amended Act, the structure of the Board is as given in **Table 5.26**.

Table 5.26
Structure of Kerala Infrastructure Investment Fund Board (KIIFB)

a)	Chief Minister	Chairperson
b)	Minister for Finance	Vice-Chairperson
c)	Chief Secretary	Member
d)	Vice-Chairman, State Planning Board	Member
e)	Secretary (Law)	Member
f)	Secretary (Finance)	Member
g)	Secretary (Finance Resources)	Member
h)	Seven independent members who are experts, who have worked in an institution of national repute in one or more of the areas of Finance, Banking, Economics	Members
i)	Chief Executive Officer	Member Secretary

Table 5.27
Executive Committee, KIIFB

a)	Minister for Finance	Chairperson
b)	Chief Secretary	Member
c)	Secretary (Law)	Member
d)	Secretary (Finance)	Member
e)	Secretary (Finance - Resources)	Member
f)	Three independent members of the Board, nominated by the Government.	Members
g)	Chief Executive Officer	Member and Fund Manager

The present independent Members in the Board are:

1. Dr. D. Babu Paul, Former Finance Secretary, Government of Kerala.
2. Prof. C.P. Chandrasekhar, Professor, Centre for Economic Studies and Planning.
3. Prof. Sushil Khanna, Professor (Economics and Finance), Indian Institute of Management, Calcutta.
4. Sri. Salim Gangadharan, Former Regional Director, Reserve Bank of India, Thiruvananthapuram.
5. Sri. J.N. Gupta, Former Executive Director, SEBI and Managing Director at Stakeholders Empowerment Services.
6. Sri. Radhakrishnan Nair, Former Executive Director Securities and Exchange Board of India (SEBI).
7. Dr. Sudipto Mundle, Member 14th Finance Commission, Former Director Strategy and Policy Department, Asian Development Bank (ADB), Emeritus professor and Member of Board of Governors, National Institute of Public Finance and Policy (NIPFP).

The Board also has an Executive Committee. The details are given in **Table 5.27**. Of the above independent Members of the Board, Prof. Sushil Khanna, Sri. Salim Gangadharan and Sri. J.N. Gupta have been appointed as the independent Members in the Executive Committee. Dr. K.M. Abraham CFA IAS, is the present Chief Executive Officer of KIIFB.

A separate wing in the Government Finance Department, namely Finance (Infrastructure) Department has been established as the Administrative Department of KIIFB and the wing functions along with KIIFB.

KIIFB will function as the key Special Purpose Vehicle (SPV) for mobilising and channelling the funds to the various infrastructure SPVs. KIIFB through its well organised and professional

approach will act as the main arm of Government to facilitate planned, hassle-free and sustained development of both physical and social infrastructure ensuring all round wellbeing and prosperity in the State. The minimum total project size is required to be above ₹100 crore. Both social and physical infrastructure projects are considered for investment, for setting a parallel pace of rapid social and economic development in all sectors. KIIFB will harness its resources through multiple investment avenues which include modern investment structures such as Infrastructure Investment Trust (In VIT), Infrastructure Debt Fund (IDF), Alternative Investment Fund (AIF); financial instruments such as General Obligation Bonds, Land Bonds, and Infra Bonds, etc.; tailor-made investment packages through existing government financial agencies like Kerala State Financial Enterprises Ltd. (KSFE); grants,

Table 5.28
Number and Total Outlay of Projects Approved by KIIFB*

Sl No	Sector	Number of projects	Total outlay of the projects (₹ in crore)
1.	Road	55	1,761.99
2.	Railway Over Bridge	15	447.56
3.	Bridge	19	263.09
4.	Flyovers including light metro flyovers	6	453.01
5.	Schools	24	562.61
6.	Sports	8	117.89
7.	Health	4	293.68
8.	Tourism	1	39.42
9.	Information Technology	3	1,174.13
10.	Forest	1	100
11.	General Education (Hi-Tech)	1	493.5
12.	Devaswom	1	141.75
13.	Power	2	521.73
14.	Irrigation	1	88.93
15.	Industries	2	1565.17
16.	Water Resources	1	1257.1
	Total	144	9,281.56

Source: : Source: KIIFB

* Data as on September 30, 2017

annuities and other guaranteed payments from Government; returns from investments, loans from domestic/bilateral/multilateral financial institutions, etc.

In the Revised Budget Speech for 2016-17 and the Budget Speech for 2017-18, the Government had announced a total of 92 infrastructure projects worth ₹24,192 crore and ₹23,251 crore respectively for implementation through KIIFB. Government has also (i) issued the detailed guidelines for the conception, preparation and submission of KIIFB projects, (ii) fixed the rates and conditions of payment of centage charges applicable with reference to KIIFB funded projects and (iii) issued the procedure and format of the Tripartite Agreement to be signed between the SPV, the Public Agency and KIIFB. Besides transferring

₹2,498.42 crore towards the seed capital corpus of KIIFB to leverage borrowings from the financial market, the Government has so far transferred ₹281.43 crore towards the share of Motor Vehicle Tax and ₹448.1 crore towards the cess on petroleum products. Government has sanctioned ₹210 crore as share of Motor Vehicle Tax and ₹165 crore as share of Cess on Petroleum Products towards the first installment of the due share for 2017-18. The amounts will be transferred shortly to KIIFB. The seed capital corpus is maintained in a non-interest bearing account in the government treasury and the other amounts are deposited in various fixed deposits as the off-take of funds by the projects is yet to commence.

For the fast track approval of projects and for hassle-free fund release, KIIFB has, with the

assistance of the National Informatics Centre, put in place comprehensive online project submission and payment systems called the Direct Payment System (DPS). Since its re-constitution in 2016, the General Body of KIIFB Chaired by the Hon'ble Chief Minister has met four times. So far KIIF

Board has approved a total of 144 projects/sub-projects for a total outlay of ₹9281.56 crore. The action for implementing the projects is in progress. The number and total outlay of projects approved by KIIFB is given in **Table 5.28**.

INFORMATION AND PUBLIC RELATIONS

In Kerala, the Department of Information and Public Relations is the nodal agency of the Government to disseminate information to the public through various media on government policies, programs, schemes, initiatives and achievements. The department facilitates feedback from the public and thereby maintains a communication flow between the government and its public.

The department undertakes the administrative, technical and promotional affairs of the public and private sector with the help of advanced technologies in the field of visual communication, journalism, etc. The department desires to initiate new strategies for popularising government policies and activities with the support of latest media and public relation technologies, launching government-media tie-ups, enhancing public relation personnel efficiency and providing better working environment. The details of the activities and programmes undertaken by the department in 2016-17 are summarised in **Box 5.19**.

Electronic Media Division

Electronic Media Division was formed in October 2008 with four wings viz, news distribution, audio-video documentation, electronic media advertisements and marketing and web and new media. The major activities include release of video news clips to media channels and streamlining the

production and management of advertisements, documentaries, Chief Minister's *Naam Munnottu* programme, maintenance and upkeep of video archives. The Audio Video Communication Wing in the Electronic Media Division produces and broadcast various video magazine programmes.

Nam Munnottu

Nam Munnottu (New version of *Sutharyakeralam*) is a complaint redressal cum discussion programme by the Hon'ble Chief Minister and it is initiated by the department. The programme is telecast by Doordarshan and its audio version is broadcasted over all stations of All India Radio. The department plans to telecast the programme through major malayalam news channels also.

Media Relations – Press Release and Photo Publicity

Press release section of the department issues news reports of government functions and other official notifications regularly. This section works 12 hours a day including holidays. Convening press meets, providing better facilities to media reporters for easy reporting etc are the major activities coming under media relations wing. This wing issues press releases every month. Every District Information offices also issues press releases regularly. These releases are e-mailed to the media and the same is published in the department website also.

Box 5.19 Major Activities

- Publicising and popularising the policies and programmes of the Government.
- Giving wide publicity of the developmental and welfare programmes undertaken by the Government through print- audio- visual- new media.
- Publishing monthlies, viz. *Kerala Calling* in English and *Sam akalika Janapatham* in Malayalam. Publishing of brochures on social and developmental subjects.
- Content management of Government web portal and news portal **www.kerala.gov.in**, **www.keralanews.in** and other websites like **www.prd.kerala.gov.in**, **www.rti.kerala.gov.in**, and the websites of Ministers.
- Gives feedback on public opinion to Government on its functioning.
- Publishing books on subjects related to culture, education, traditional art forms, eminent personalities, district hand book, Kerala Authentic Hand Book etc.
- Preparation of Chief Ministers Complaint redressal television programme.
- Functioning of information offices and news dissemination centres in all districts.
- Screening of feature films, documentaries and short films either produced or purchased by the Department in conformity with the social and cultural interests of the State.
- Official agency for the release of Government advertisements.
- Organizing publicity programmes with the multi media technology including visual arts.
- Act as the enforcement agency for Cable TV Act and Press and Registration of Books Act.

Government Web Portal and Maintenance of Mail Server

The Web and New Media division undertakes the content management of government web portal (**www.kerala.gov.in**), which is a repository of details on various government departments, their functions and it provides information on the socio-economic, cultural and political history of the State. This portal, also gives access to government orders/circulars and to orders issued following Cabinet decisions.

Field Publicity, Exhibitions, Special Public Relations, Culture

The field publicity wing organises various awareness programmes and campaigns at State and District levels for giving adequate publicity to Government policies and initiatives. Exhibitions, seminars, workshops, social media and multimedia campaigns, art and cultural forms are used for these purposes.

Modernisation of Tagore Theatre

The modernisation of Tagore Theatre in Thiruvananthapuram was completed. The theatre has become one of the sought after culture centre in the State, particularly in the capital city.

LOCAL GOVERNMENT



LOCAL GOVERNMENT

6.1 DECENTRALISED PLANNING

Over the last two decades, Kerala's experience in decentralisation has been accepted globally as one of the most significant institutional reforms in public governance. Kerala adopted a big bang approach to decentralisation with the launch of People's Plan Campaign on 17th August 1996. The process of decentralised planning was launched in IX Five-Year Plan, consequent to the enactment of Kerala Panchayati Raj Act (1994) and Kerala Municipality Act (1994) and the constitutional amendments. Under the X Five-Year Plan, the decentralisation programme in Kerala was restructured and named "Kerala Development Plan" (KDP). In the XI Five-Year Plan period, the entire process was revamped by giving stress to the concept "People's Planning," focusing on the completion of the institutionalisation of decentralised government. The XII Five-Year Plan approach envisaged some concrete steps to strengthen the planning process with the use of information technology. The second phase of the "People's Plan," campaign has now been inaugurated. The thrust in the XIII Five-Year Plan period is on second-generation social and economic issues confronting the State. The second phase of decentralised planning aims at solving these second-generation problems with genuine people's participation backed by strong administrative and political measures.

The most prominent feature of Kerala's decentralisation is the devolution of Plan resources on formula based, non-discretionary and equitable manner. This has enabled the Local Governments to receive development funds from the State's Plan allocation for implementing schemes formulated at local level. Since the launch of decentralised planning in 1997-98, an average about 25 per cent of the State's investible resources have been devolved to local governments as Development fund. In addition, the State transfers 3.5 per cent of its own tax revenue as General purpose fund and 5.5 per cent of own tax revenue as Maintenance fund every year. Local Governments have absolute freedom in formulating and implementing projects based on their priorities subject to Plan guidelines issued by the State government.

At present, there are 1,200 local governments in Kerala, which include 941 Grama Panchayats, 152 Block Panchayats, 14 District Panchayats, 87 Municipalities and 6 Municipal Corporations. The allocation of development funds to LGs is being done under three categories - General Sector, Scheduled Caste Sub Plan (SCSP) and Tribal Sub Plan (TSP). The outlay for each category during 2011-12 to 2015-16 was fixed on the basis of the recommendations of the IV State Finance Commission (SFC). In the subsequent years, the change in outlay was in accordance with the increase in State Plan outlay. The Commission recommended that at least 25 per cent of the likely Plan size of the State should be devolved to LGs for development purpose. The fund would be inclusive of the devolution from the Central Finance Commission and allocation to LGs for World Bank supported project called the Kerala Local Government Service Delivery Project.

Review of the XII Five-Year Plan

In the beginning of the twelfth Five-Year Plan some changes were made in the Plan guidelines, mainly in sectoral ceilings and project appraisal. There was no mandatory minimum ceiling in productive sector during the first four years. In case of infrastructure sector, the mandatory ceiling was fixed at 45 per cent in Grama Panchayats and Block Panchayats, 55 per cent in Municipalities and Corporations and 50 per cent in District Panchayats under general sector outlay. In addition, 10 per cent of the development fund was mandatorily

earmarked for Women Component Plan and 5 per cent to children, old age, differently abled, palliative care and other vulnerable groups. The experience in the first four years was reviewed by the new government in 2016-17 and a decision was taken to restore the mandatory minimum allocation of 20 per cent under productive sector and minimum allocation of 10 per cent for sanitation.

The budget allocation (Development Fund) to Local Governments in the XII Five-Year Plan is outlined in **Table 6.1.1**.

The total development fund available with local governments in a financial year includes unspent balance of the previous year. However, the system of carrying forward the unspent balance to the next financial year was discontinued from April 1, 2016 onwards. In the XII Five-Year Plan, the budgeted outlay of development funds to local governments was ₹21,728 crore and ₹19,001.75 crore was utilised (**Table 6.1.2**).

Major Policy Changes Initiated in the First Year of XIII Five-Year Plan

The two decades of Kerala's decentralised planning experience is unique and recognised world over. In the XIII Five-Year Plan period, the State envisages revitalisation of the system of democratic governance by analysing the experiences of the past. The year under review witnessed some major changes in the methodology

Table 6.1.1
Award of Development Fund for LGs (2012-17), ₹ in crore

Year	State Plan Outlay*	Development Fund to LSGs	% to State Plan Outlay
2012-13	14010.00	3228.00	23.04
2013-14	17000.00	4000.00	23.52
2014-15	20000.00	4700.00	23.50
2015-16	20000.00	4800.00	24.00
2016-17	24000.00	5000.00	20.83
Total	95010.00	21728.00	22.90

*Inclusive of KSEB's contribution

Table 6.1.2
Development Fund Year-Wise Outlay and Expenditure in
XII Five-Year Plan, ₹ in crore

Year	Budgeted Outlay	Expenditure	% to Budgeted outlay
2012-13	3,228.00	2,741.97	85.00
2013-14	4,000.00	3,918.27	98.00
2014-15	4,700.00	4,033.94	86.00
2015-16	4,800.00	4,467.76	93.00
2016-17	5,000.00	3,839.81	76.00
Total XII Plan	21,728.00	19,001.75	87.00

**Inclusive of KSEB's contribution*

of local level participatory planning in Kerala. The changes were introduced in accordance with the approach of the Thirteenth Five-Year Plan of the State. The second phase of the democratic decentralisation in Kerala has been initiated with the introduction of a new set of guidelines for formulation and implementation of the Local Government Plans. An important objective of the new guidelines was to simplify the procedures so that delays can be avoided. On account of the cumbersome procedures that existed until now, the Plan formulation and its approval took more time than implementation. Therefore, the Local Governments were forced to rush through the process of implementation during the terminal months of the financial year. It was also responsible for the bunching of payments in the month of March. As a result of the introduction of the new methodology, all the Local Governments in the State could complete the process of formulation of their Annual Plans for 2017-18 before 15 June 2017. This is an unprecedented achievement in the history of local level planning in the State. Accordingly the year also witnessed early beginning of the implementation process. The Local Governments have already started the preparations for making the Annual Plan for 2018-19. The aim is to get it approved well before the beginning of the financial year. As a consequence, it is also hoped that the objective of integrating Annual Plans and the Local Government budgets would be achieved for the first time in 2018-19.

The Thirteenth Five-Year Plan of the State government places special emphasis on the issues arising due to fast moving urbanisation in Kerala. It recognises the importance of developing appropriate strategies and programmes for coping up with challenges and opportunities thrown up by the process of urban growth. Keeping this in view, the Government has issued for the first time a separate set of guidelines for Plan formulation in urban Local Governments. An equally important initiative introduced in the year is the effort to make the district Plans. It is a constitutional mandate that the District Planning Committees make District Plans for integrating development plans prepared by various tiers of governments in the district. The State government has already issued the guidelines for the preparation of the district Plans. The District Planning Committees in the State are now engaged in the task of preparing the District Plans well in advance so that its suggestions can be incorporated in the Local Government Plans for 2018-19.

Although 'beneficiary committees' were introduced for facilitating people's participation in Plan implementation, as many studies have pointed out, they have over time degenerated as agencies of corruption. The Thirteenth Five-Year Plan proposes to plug such loopholes in the system. The new guidelines, therefore, promotes e-tendering, besides restricting beneficiary committees to areas where they were found effective. The shift in the system of execution of public works is expected

to bring about major savings in the cost of public works at the local level.

The new guidelines were designed to extend the autonomy of decision making at the local level. This is sought to be achieved by broadening the scope of subsidies that can be given through local government Plans. Besides the local governments are allowed a window of 'Innovative Programmes' for designing schemes that are innovative but not allowed under the general rules regarding subsidies.

Other major policy changes are;

Mandatory minimum allocation of 30 per cent for productive sector under general sector fund was ensured in the case of three tier panchayats and 10 per cent in the case of urban local bodies. Also 5 per cent allocation for disabled and children, 5 per cent for old age/palliative population, 10 per

cent for WCP and 10 per cent for sanitation were ensured.

Planning Committees were formed in all local government institutions for Plan formulation, implementation and monitoring of Plan schemes. This ensured the active involvement of all stakeholders in the Plan formulation of 2017-18 financial year.

All the local governments in the State prepared Status Reports in 2017-18.

The activities of four Development Missions launched by the Government namely - AARDRAM, HARITA KERALAM, LIFE and Education Mission which seeks to address the developmental problems of the State, are integrated with the Plans of local governments.

**Box 6.1.1
District Plan**

To promote multilevel planning and to ensure greater integration between the development needs and priorities of various tiers of local governments and different socio-economic classes in the State and district level, the State initiated formulation of district Plan. Below the State, district occupies a pivotal role in planning because of its administrative advantages. The convergence and integration of various agencies and different tiers of government needs a holistic district development Plan. The co-ordination between various tiers of government and line departments will be strengthened to take up joint projects under district development Plan. In this context comprehensive District Plans which will ensure multilevel planning, will be formulated in districts in XIII Five-Year Plan period. The District Plan formulation intends to achieve a balanced, integrated, and meaningful development of districts through spatial integration, sectoral integration, vertical and horizontal integration of different tiers of government, integration of resources etc. This will help in coordinated development of districts and a closer and more transparent link with State and National priorities.

In accordance with the policy announcement made by the Hon'ble Governor in the Legislative Assembly for the year 2017, the Government has issued, as per GO (P) No. 19/ 2017/ Planningdt. 23-09-2017, detailed guidelines for the preparation of District Development Plans under the auspices of District Planning Committees (DPC). As envisaged in the guidelines, all DPCs have constituted Sub Committees for the preparation of District Plans. As per the calendar approved by the Government, the DPCs should send the final draft of the District Plans to the Government by the first week of January 2018 for approval.

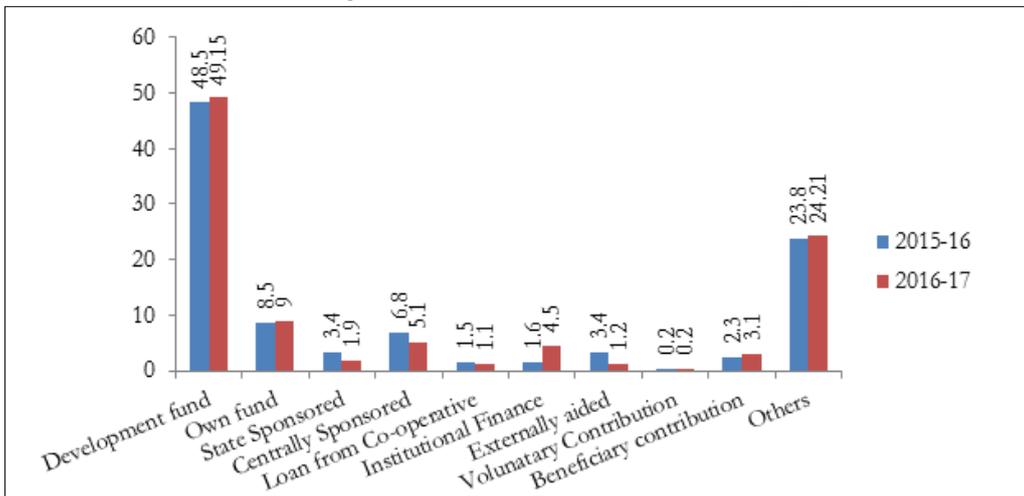
Financing of Local Government Plans - Annual Plan 2016-17

The various sources of funds available to local government institutions include Plan allocation (Development Fund), own fund, State sponsored schemes, centrally sponsored schemes, beneficiary contribution etc. In 2016-17 the total size of the Plans of all local governments was ₹11,644.62 crore. Out of which the share of development fund released to all local governments constitutes ₹5,724.90 crore, i.e. 49 per cent of the total

allocation from various sources. The own fund contributes only 9 per cent of the total Plan size and the balance fund comes from other sources. Source-wise funding details and the respective percentage share to total fund allocated in 2015-16 and 2016-17 are given in **Figure 6.1.1**. Source/Sub-sector wise details of 2015-16 and 2016-17 are given in **Appendices 6.1.1 and 6.1.2**.

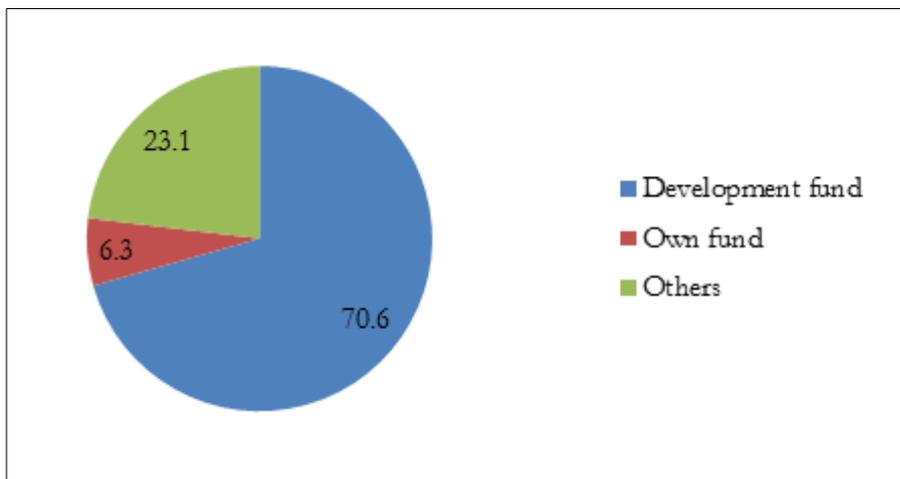
The **Appendix 6.1.2** reveals that the share of development fund to total Plan size of local governments is 49 per cent and at the same time, the share of development fund to total

Figure 6.1.1
Sources of Financing LGs Plan – 2015-16 and 2016-17, in per cent



Source: Information Kerala Mission, 2017

Figure 6.1.2
Expenditure Share of Different Sources of Funds in 2016-17, in per cent



*Others include State sponsored, centrally sponsored, loan from co-operatives, voluntary contribution, beneficiary contribution and others (items excluding grant in aid and own fund).

expenditure was 70.6 per cent in 2016-17. It shows that the dependency of the local governments on development fund for expenditure responsibilities is very high and the local governments are not adequately exploiting the potential of own revenue generation.

Performance of Local Government – Development Fund

The budget allocation under the category of development fund to local governments in the Annual Plan 2016-17 and 2017-18 are given in **Table 6.1.3**. It may be noted that the allocation to local government institutions is in accordance with the recommendations of the State Finance Commission and policy decisions thereon. The Appendix IV which is published along with Annual State Budget clearly lists out the share of development fund to each local governments.

The local governments allocate their development funds (Plan allocation) broadly under three sections viz; productive, service and infrastructure sectors according to local government priorities and Plan guidelines. The productive sector mainly includes agriculture and allied sectors, soil and water conservation, irrigation and industries. The service sector consists of education and allied sectors, health and allied services, development of women and children and labour welfare etc.

and the infrastructure sector includes energy, transportation and buildings.

In the year 2016-17, the total fund released under the category of development fund was ₹5,724.90 crore which is higher than the budgeted outlay of ₹5,000.00 crore. Out of the total fund released, ₹3,839.88 crore was utilised for different sectors in 2016-17. Thus, the Plan fund utilisation percentage in 2016-17 was 67.07 per cent which was lower compared to the previous year (73.6 per cent). It may be noted that the expenditure pattern shows variations among different tiers of local bodies. Among the three tiers, the performance of Block Panchayat was better with 70 per cent expenditure followed by Grama Panchayats with 69 per cent and District Panchayats with 68 per cent in 2016-17. Municipalities (64 per cent) and Municipal Corporations (59 per cent) have lowest expenditure among various tiers of government in 2016-17. The tier-wise details of outlay, fund available and expenditure in 2015-16 and 2016-17 are given in **Figure 6.1.3** and **Appendix 6.1.3** and **Appendix 6.1.4**.

Category-Wise Performance

The allocation of development fund to Local Governments falls in three categories – General Sector, Special Component Plan (SCP) and Tribal Sub Plan (TSP). The outlay for each category is fixed on the basis of recommendations of the

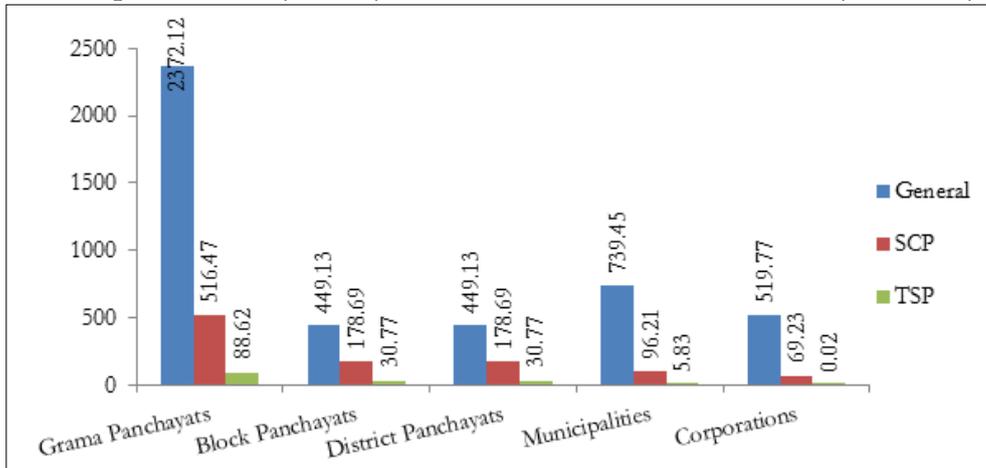
Table 6.1.3
Budgeted Outlay of Development Fund in 2016-17 and 2017-18 (₹ in crore)

Type of LGs	2016-17				2017-18			
	General	SCP	TSP	Total	General	SCP	TSP	Total
Grama Panchayats	1968.25	516.46	88.62	2573.34	2409.97	582.66	99.98	3092.22
Block Panchayats	361.66	178.69	30.76	571.11	556.20	201.59	34.71	792.50
District Panchayats	361.66	178.69	30.76	571.11	556.20	201.59	34.71	792.50
Municipalities	642.33	95.82	5.82	743.98	761.67	108.10	6.57	876.34
Corporations	471.19	69.22	0.01	540.43	595.81	78.10	0.02	673.94
Total	3805.10 (4529.6)	1038.90 (1039.3)	156.00 (156.01)	5000.00 (5724.9)	4879.85	1172.04	175.99	6227.50

Figures in bracket is revised budget estimate for 2016-17 based on actual release.

Source: Appendix IV 2016-17 and 2017-18

Figure 6.1.3
Development Fund (2016-17) Released to Different Tiers of LGs (₹ in crore)



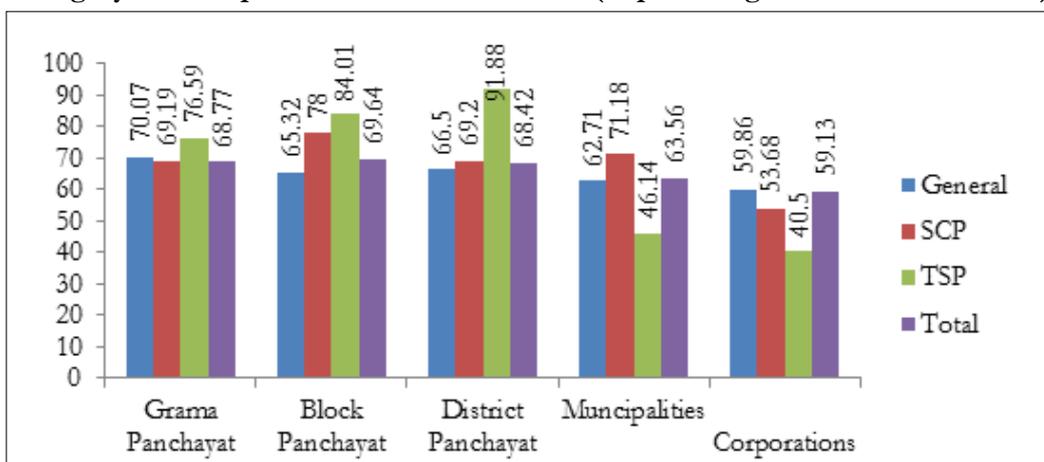
State Finance Commission. In 2016-17, an amount of ₹5,724.90 crore was released to different categories, of which general category, SCSP and TSP constituted 79 per cent, 18 per cent, and 3 per cent respectively. An analysis of category-wise utilisation in 2016-17 reveals that the percentage of expenditure under General Sector was 66 per cent of the total fund released and in the case of SCSP and TSP, it was 70 per cent and 80 per cent respectively. Shortfall in expenditure under SCSP/TSP was a common phenomenon for all tiers of Local Governments in previous years. But in 2016-17 the expenditure under SCSP and TSP category was higher than in the general category. This is a remarkable achievement by

local governments. The category-wise and local body-wise allocation and expenditure in 2016-17 are given in **Appendix 6.1.3** and **6.1.4** and in **Figure 6.1.4**.

Sectoral Analysis

The LGs allocate their funds mainly in three sectors viz. productive, service and infrastructure. Out of the total expenditure in 2016-17, the share of expenditure by productive, service and infrastructure sectors was 11 per cent, 64 per cent and 25 per cent respectively. It may be noted that the total expenditure under productive sector has increased compared to the previous year. But still

Figure 6.1.4
Category-Wise Expenditure of LGs in 2016-17 (as percentage to released amounts)



Source: Information Kerala Mission 2017

it is far below the minimum sectoral allocation prescribed for the year. The improvement in productive sector expenditure in 2016-17 is an indication of the revival in agriculture and allied sectors. The expenditure incurred by urban local bodies shows a dismal picture in productive sector compared to their rural counterparts. The sector-wise expenditure details of 2015-16 and 2016-17 are given in **Table 6.1.4**. The sub-sector wise expenditure details in 2015-16 and 2016-17 are given in **Appendix 6.1.5 and Appendix 6.1.6**.

Productive Sector

The productive sector includes sub sectors such as agriculture, animal husbandry, dairy development irrigation, industry, energy conservation, fisheries etc. The total utilisation of Plan resources in the Annual Plan 2016-17 under productive sector was ₹434.32 crore. Out of the total productive sector expenditure by various tiers of Local Governments, 44 per cent of fund was utilised for the implementation of schemes under agriculture and allied sectors in 2016-17. The LGs have given more weightage to agriculture and allied sectors compared to industries and other productive sectors. The industries sector has not received due consideration over the review period. The rural local bodies, especially Grama Panchayats have given major attention to the implementation of agriculture and allied programmes in productive sectors by spending a major share of the total

expenditure incurred in productive sector. The details of productive sector expenditure in 2016-17 are given in **Appendix 6.1.7 and Figure 6.1.5**.

Service Sector

Social welfare and service sector is the major sub sector under, which the local governments set apart a major source of Plan allocation. The major service sector expenditure incurred by local governments include housing, education, sanitation and waste management etc. and these investments play a crucial role in local public governance. The service sector priorities of local governments enhance the quality of basic services provided to the public through welfare oriented programmes. Service sector fund utilisation in 2016-17 has improved than the productive and infrastructure sectors and achieved 64 per cent of the total expenditure. An amount of ₹449.11 crore was spent by the local governments in 2016-17 for financial contributions under service sector as per government order. The total expenditure for service sector activities by all the local governments comes to ₹2,455.24 crore in 2016-17 which is higher than the previous year. The lion's share of service sector expenditure undertaken by all the local governments was in housing and related expenditure. An amount of ₹434.76 crore was expended on housing, house maintenance and related activities. Sanitation and waste processing

Table 6.1.4
Sector-Wise Percentage of Expenditure to Total Expenditure in 2015-16 and 2016-17(in per cent)

Type of LGs	2015-16				2016-17			
	Productive	Service	Infra-structure	Total	Productive	Service	Infrastructure	Total
Grama Panchayats	8.81	53.21	37.98	100	12.22	63.73	24.05	100
Block Panchayats	7.92	59.43	32.65	100	14.84	62.27	22.89	100
District Panchayats	6.93	60.43	32.64	100	14.73	67.71	17.55	100
Municipalities	5.27	51.37	43.35	100	7.25	61.94	30.81	100
Corporations	4.30	48.59	47.10	100	3.14	65.55	31.31	100
Total	7.68	54.47	37.85	100	11.31	63.94	24.75	100

Source: Information Kerala Mission 2017

Figure 6.1.5
Sub-Sector Expenditure Share of Productive Sector in 2016-17 (as percentage)

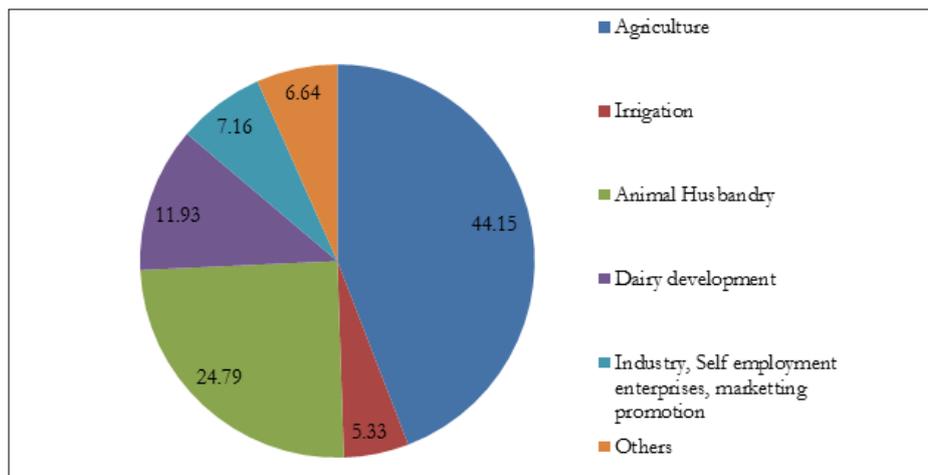
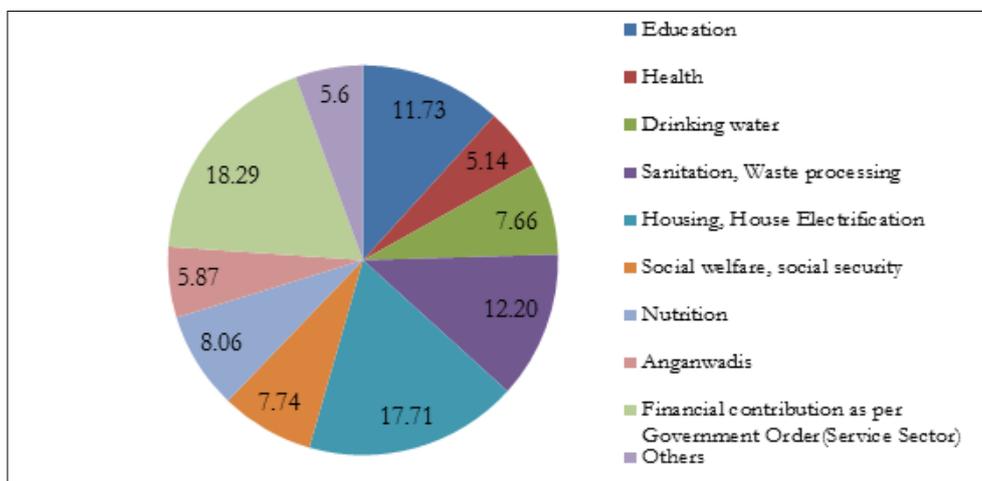


Figure 6.1.6
Sub-Sector Expenditure Share of Service Sector in 2016-17 (as percentage)



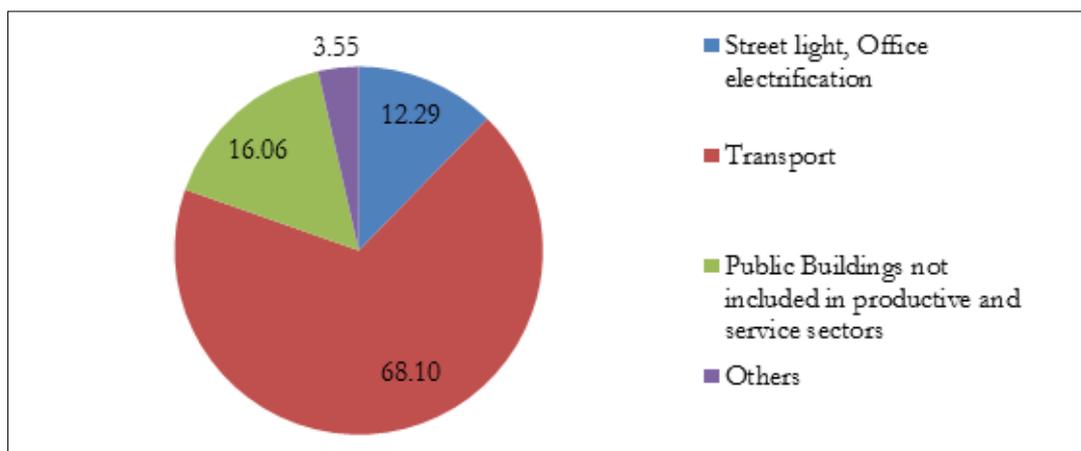
activities accounts for (₹299.44 crore) another major share in service sector expenditure. The expenditure on education and nutrition was ₹287.9 and ₹198.01 crore respectively. The expenditure under service sector in 2016-17 is shown in **Appendix 6.1.8** and **Figure 6.1.6**.

Infrastructure Sector

In 2016-17, the Local Governments set apart 25 per cent of the total expenditure on infrastructure sector activities such as street lighting, transportation, and construction activities etc. The

expenditure in 2016-17 shows a marginal decrease and the overall infrastructure expenditure as a share of total expenditure reduced to 25 per cent from 38 per cent of 2015-16. Out of the total expenditure a major portion has been utilised for transport sub-sector which includes roads, bridges etc. Out of the total infrastructure expenditure of ₹950.32 crore, Grama Panchayats utilised ₹492.44 crore which is followed by municipalities (₹164.77 crore). Expenditure details under infrastructure sector in 2016-17 are given in **Appendix 6.1.9** and **Figure 6.1.7**.

Figure 6.1.7
Sub-Sector Expenditure Share of Infrastructure Sector in 2016-17 (as percentage)



Scheduled Caste Sub Plan and Tribal Sub Plan under Decentralisation

The Scheduled Caste Sub Plan and Tribal Sub Plan are prepared based on Article 46 of Constitution of India for providing special protective measures to safeguard the interest of Scheduled Caste (SCs) and Scheduled Tribe (STs). This constitutional mandate requires the State 'to create a regime of equality including social equality through comprehensive measures of social justice.' As one of the major objectives of decentralised planning is to empower social equity and to improve the socio-economic status of Scheduled Castes and Scheduled Tribes and enhancing their quality of life, the devolution under Special Component Plans has prime importance.

The allocation of Plan funds to SCSP and TSP from State Plan outlay is done according to the ratio of population of SCs and STs to total population of the State. Out of the total SCSP/TSP Plan outlay, a portion of funds are earmarked to LGs for implementation of schemes under decentralised planning. The outlay and expenditure for each category in 12th Five-Year Plan are shown in **Table 6.1.5**.

The expenditure performance of SCSP and TSP funds of local governments has improved over the previous year. The total expenditure incurred by local governments on SCSP compared to total fund released was 70 per cent, which shows an improvement over the previous year. On the other hand utilisation of 80 per

Table 6.1.5
SCSP and TSP Allocation and Expenditure (2012-13 to 2016-17 (₹ in Crore))

Year	SCSP		TSP	
	Budget Allocation	Expenditure*	Budget Allocation	Expenditure*
2012-13	739.46	661.58	110.98	99.65
2013-14	828.2	882.49	124.3	136.89
2014-15	927.58	811.56	139.21	121.61
2015-16	927.58	857.03	139.21	149.78
2016-17	1038.90*	726.02	156.00	124.69

*Revised allocation ₹ 1039.29 crore

Source: Appendix IV of the Budget and Information Kerala Mission, 2017

cent of the total TSP fund released, is also an indication of effective fund utilisation. The tier-wise expenditure of SCSP shows that the Block Panchayats and municipalities have the highest expenditure. And in the case of TSP, the District Panchayats has the highest expenditure (92 per cent). Municipal Corporations have not effectively utilised both SCSP and TSP funds (**Appendix 6.1.4**)

Performance under Special Sector Plans

Women Component Plan and Plan for disadvantaged groups (aged, children, differently abled, palliative and other vulnerability) in the Plan of local governments is one of the salient features in Kerala's decentralised planning. In 2016-17 it was stipulated that of the total Plan size, local governments have to set apart the mandatory provision of 10 per cent for women development and 5 per cent for children and disabled and 5 per cent for aged population. The expenditure on WCP in 2016-17 as percentage to total expenditure was 9.5 per cent, which is slightly lower than the overall WCP sectoral allocation of 10 per cent. In the case of special programme for children and differently abled it comes to 3.5 per cent and 2.3 per cent respectively. The details of expenditure for special sector Plans in 2016-17 are given in **Table 6.1.6** and the tier-wise details in 2015-16 and 2016-17 are given in **Appendix 6.1.10** and **Appendix 6.1.11**.

Strengthening of District Planning Machinery

District Planning Committee, has been created as per Article 243 ZD of the Constitution of India at the district level for planning at district and below. The district planning as a strategy for a balanced, integrated and meaningful development of district has been an accepted concept since the beginning of the planning era. Accordingly, District Planning Committees were constituted in all the fourteen districts in accordance with the spirit of the 74th Amendment of the Constitution so that they can play the nodal role in Plan preparation by LGs, approval of local Plans, providing suggestions to LGs, monitoring of Plan implementation etc. and their integration at district level as also their linkages with the State Plan. The DPC consists of 15 members headed by the District Panchayat President with District Collector being the Member Secretary. All MPs and MLAs are permanent invitees of DPC and the district level officers are ex-officio Joint Secretaries. The DPCs are fully functional in the State. The District Planning Officer being the Joint Secretary (Co-ordination) of DPC assists the Member Secretary in convening meetings, preparation of agenda, minutes and all other secretarial duties. The constitution of DPC has been done every five years without fail in the State consequent to the general election to the Local

Table 6.1.6
Expenditure for Special Sector Plan in 2016-17

Special sectors	Expenditure (₹ in crore)	% to total Expenditure
Women Component Plan	366.35	9.5
Special Programme for Children	134.72	3.5
Special Programme for Elderly	56.88	1.2
Differently Abled	89.8	2.3
Palliative Care	66.61	1.7
Youth Welfare Programmes	77.55	2.0

**Inclusive of KSEB's contribution*

Source: Information Kerala Mission, 2017

Governments every five year. The construction of DPC secretariat buildings have been completed in Ernakulam, Thrissur, Kasaragod, Wayanad, Kannur and Alappuzha. In the other districts the work is at various stages of completion.

Box 6.1.2

Kerala Local Government Service Delivery Project

The World Bank aided Kerala Local Government Service Delivery Project was started in Kerala in the financial year 2011-12. The objective of the Project is to enhance and strengthen the institutional capacity of the Local Government System in Kerala to deliver services and undertake basic administrative and governance functions more effectively and in a sustainable manner. The original project cycle of KLGSDP was 2011- 2015 December 31, however it was extended up to December 2017. The four components of KLGSDP are (i) Performance Grant to Municipalities and Grama Panchayats (ii) Capacity Building (iii) Enhancing State Monitoring of the Local Government System and (iv) Project Management and Implementation. As part of performance grant, 40,000 projects have been created (as on March 31, 2017) and maintenance of capital assets have been done by various Municipalities and Grama Panchayats in various sectors. This includes building for bud schools, bus stations, road connectivity, construction of small check dams, anganwadis, fish markets etc. These projects adhered both procurement and environment and social management framework rules as per the World Bank norms.

Table 6.1.7
Revised Project Cost of KLGSDP (₹ crore)

Component	GOK	World Bank	Total
Performance Grant	471.32	1,019.59	1,490.91
Capacity Building	0.00	73.75	73.75
Enhancing State Monitoring of the Local Government System	0.00		
Project Management	0.00		
Total Project Cost	471.32	1,093.34	1,564.66

Table 6.1.8
Component-wise Expenditure up to March 31, 2017 (₹ crore)

Component	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Performance Grant	93.54	190.35	271.19	115.30	276.57	217.95	1164.90
Capacity Building	0.09	2.82	4.18	3.14	2.49	7.27	19.99
Monitoring and Evaluation	0.02	0.49	0.53	0.59	0.90	1.32	3.85
Project Management	1.02	1.99	5.02	4.04	2.95	3.64	18.66
Total Project Cost	94.67	195.6	280.92	123.07	282.91	230.18	1207.4

6.2 RURAL DEVELOPMENT PROGRAMMES

In the Indian context, rural development is significant as majority of the people in the country lives in rural areas. As per the 2011 Census, the rural population in India was 68.86 per cent (833.75 million). The corresponding proportion in Kerala was 52.30 per cent (17.47 million).

A number of schemes are being implemented in rural areas for poverty reduction, employment generation, rural infrastructure development, waste management, sanitation, provision of basic minimum services and capacity buildings. All these programmes are directly or indirectly related to the overall development of the rural areas in the State. A brief review about the major schemes of the Rural Development Sector is given below.

Mahatma Gandhi National Rural Employment Guarantee Programme (MGNREGP)

Mahatma Gandhi National Rural Employment Guarantee Act, 2005 (MGNREGA) notified on September 7, 2005, mandates that at least 100 days of guaranteed wage employment be provided in a financial year to every rural household whose adult members volunteer to do unskilled manual work resulting in the creation of productive assets of prescribed quality and durability. Further, the Act aims to strengthen the livelihood resource base of the poor, proactively ensures social inclusion and strengthens Panchayat Raj institutions. From 1st April 2017 onwards, the wage rate under this programme in Kerala is ₹258 per day. From 2017-18, there have been areas of convergence between MGNREGP and the “Haritha Keralam Mission.”

The expenditure under MGNREGP in 2016-17 was ₹2,426.33 crore which is 96.5 per cent of the

total release in the year. A total of 6.85 crore man days were generated, of which 1.16 crore were for Scheduled Castes and 0.28 crore were Scheduled Tribes. In 2017-18 (till August 31, 2017) ₹393.48 crore was expended and 0.99 crore man days was created. The financial and physical progress of MGNREGP in 2016-17 and 2017-18 (till August 31, 2017) are given in **Appendix 6.2.1, 6.2.2, 6.2.3 and 6.2.4.**

Pradhan Mantri Awaas Yojana Gramin – PMAY (G)

Safe and secure shelter is one of the basic needs for human being. Therefore, construction of houses was included as one of the major activities under the Rural Development Sector.

Beneficiary selection for PMAY-G will be from Socio Economic and Caste Census (SECC - 2011) data. The minimum unit (house) size is 25 sq. mt. including a dedicated area for hygienic cooking. Unit assistance is ₹1.20 lakh in plain areas and ₹1.30 lakh in hilly/difficult areas from 2016-17 onwards. The unit cost is to be shared between central and State governments in the ratio 60:40. The beneficiary if he/she so chooses, would be facilitated to get institutional finance up to ₹70,000. Construction of toilet has been made an integral part of the PMAY-G house, for this fund is being provided from the scheme “Swachh Bharat Mission (G)” or “MGNREGS” or any other dedicated financing source.

In order to unify the rates for the construction of houses at Local Governments level, the additional amount over and above the unit cost fixed by the Government of India has to be met by Grama-Block-District Panchayats in the ratio of 25:40:35.

In 2016-17, an amount of ₹184.70 crore was expended and construction of 46,166 new houses were completed. In 2017-18 (up to August 31, 2017), an amount of ₹64.04 crore was expended and the construction of 6,377 new houses under the scheme PMAY-G have been completed. From 2017-18 onwards, the activities of PMAY-G in Kerala is taken as a part of “LIFE Mission.” Financial and physical achievements of the programme in 2016-17 and 2017-18 (up to August 31, 2017) are shown in **Appendix 6.2.5** and **6.2.6** respectively.

Pradhan Mantri Gram Sadak Yojana (PMGSY)

PMGSY was launched on December 25, 2000 as a 100 per cent Centrally Sponsored Scheme (CSS) with a view to establish rural connectivity and connect unconnected habitations. The objective of the scheme is to provide good all-weather access to eligible unconnected habitations. From 2015-16 onwards, the sharing pattern has been changed to 60:40 between Central and State government. At the State level, Kerala State Rural Roads Development Agency (KSRRDA) is the nodal agency for implementing the scheme.

Since Government of India funds can be utilised only for the actual estimated cost of construction of roads under the scheme, State support for PMGSY for meeting tender excess, shifting of utilities and maintenance provision for assets already created was included in the State Budget from the financial year 2010-11 onwards.

Under “PMGSY (CSS)” ₹218.50 crore and under “State support for PMGSY” ₹90.15 crore was expended in 2016-17. In 2017-18 (up to 31st August 2017) an amount of ₹84.42 crore was expended under PMGSY (CSS). In 2016-17 and 2017-18 (up to August 31, 2017) the total length of roads completed was 5,753.59 km under the scheme.

Pradhan Manthri Krishi Sinchai Yojana (PMKSY) - Watershed Component

From July 1, 2015 onwards, Integrated Watershed Management Programme (IWMP) has been renamed as Pradhan Manthri Krishi Sinchai Yojana (PMKSY) - Watershed Component. The sharing pattern between Central and State Government is in 60:40 ratio.

Effective management of runoff water and improved soil and moisture conservation activities such as ridge area treatment, drainage line treatment, rain water harvesting, in-situ moisture conservation and other allied activities on watershed basis is included in the programme. Converging with MGNREGS for creation of water source to full potential in identified backward rainfed blocks including renovation of traditional water bodies are also included.

From 2016-17 to 2017-18 (up to August 31, 2017) an amount of ₹581.97 crore has been expended and 616 micro watersheds have been constructed under the scheme. From 2017-18 onwards, PMKSY - Watershed Component activities of the State is included as a part of ‘Haritha Keralam Mission’.

Suchitwa Mission

Suchitwa Mission is functioning as the nodal agency for assisting Municipal Corporations, Municipalities and Grama Panchayats in all waste management aspects including sanitation, solid and liquid waste management.

Innovative initiatives

Green Protocol - Green Protocol which helps to reduce waste generation, was successfully introduced in National Games 2015 and is now being followed in different events and functions, both government and private. In 2016-17, Green

Protocol was observed in major events held in the State viz: - School arts festival, Attukkal Pongala, Honourable Chief Minister's mass contact programme etc.

Suchitwa Mission is the implementing agency for the schemes Suchitwa Keralam and Swachh Bharath Mission (Gramin) in rural areas.

1. *Suchitwa Keralam*

Suchitwa Mission is the implementing agency of the comprehensive action Plan, Malinya Mukta Keralam (MMK). This has been prepared for tackling the issues and challenges in the seven components of sanitation which are accepted universally i.e., safe disposal of human excreta, home sanitation and food hygiene, personal hygiene, solid waste management, liquid waste management, safe handling of drinking water and community environmental sanitation. The scheme comes under the broad umbrella of "Haritha Keralam Mission" from 2017-18 onwards.

In 2016-17, a sum of ₹26.00 crore was earmarked but the release was only ₹15.00 crore and the expenditure was ₹11.21 crore. In 2017-18, an amount ₹51.67 crore was earmarked and ₹3.71 crore was expended (up to September 30, 2017).

2. *Swachh Bharath Mission (Gramin)*

To accelerate the efforts to achieve universal sanitation coverage and to put focus on sanitation,

the Government of India launched the Swachh Bharat Mission on October 2, 2014. The Mission aims to achieve a Swachh Bharat by 2019, as a fitting tribute to Mahatma Gandhi on his 150th birth anniversary. In Rural India, this would mean improving the levels of cleanliness through Solid and Liquid Waste Management activities and making villages Open Defecation Free (ODF), clean and sanitised. From 2015-16 onwards, the sharing pattern between Central and State Government is 60:40.

For this scheme, ₹100.00 crore and ₹102.50 crore (including Central and State share) were earmarked and ₹154.27 crore and ₹153.32 crore were expended in 2016-17 and 2017-18 (up to September 30, 2017) respectively.

The District-wise Open Defecation Free (ODF) Status of Rural Kerala is given in **Appendix 6.2.7**.

Rastriya Gram Swaraj Abhiyan (RGSA)

Rashtriya Gram Swaraj Abhiyan (RGSA - erstwhile Rajiv Gandhi Panchayat Sashaktikaran Abhiyan-RGPSA) was introduced to help Panchayati Raj Institutions develop governance capabilities to deliver the Sustainable Development Goals. The restructured scheme aims at addressing the challenges put forth before Panchayati Raj Institutions in the new scenario by way of following:

- More transparency in processes and procedures

Box 6.2.1

Open-Defecation Free (ODF) Kerala

The State Government declared rural Kerala as ODF on November 1, 2016. The State of Kerala became the third State overall and the largest State so far to be declared ODF under the Swachh Bharat Mission (SBM) (Gramin). 174,720 toilets have been constructed in rural Kerala including critical areas like remote Tribal hamlets and water-logged areas under the ODF programme. Unit cost of individual house latrine is ₹15,400 of which ₹12,000 was released from SBM (Gramin) in rural areas and the balance amount is met by the Local Governments.

- Responsiveness of Gram Panchayats to the needs and aspirations of the most marginalised/ deprived sections of the society.
- Innovative use of technology to take Gram Panchayats to next level in the twenty first century. It includes digitisation of Panchayat processes for reaching out to the most marginalised/ deprived sections of the society and improve quality of their lives and reducing digital divide.
- Creation of space for people's participation to address social sector issues like health, sanitation, education, promoting the cause of girl child, SC/ST welfare, welfare of the persons with disabilities and the aged, etc.

In 2016-17 and 2017-18 (up to September 30, 2017) an amount of ₹10.82 crore and ₹5.48 crore respectively (including Central share, State share and opening balance) was the expenditure under the scheme. Assistance was provided for construction of 22 new Grama Panchayat buildings. 33 Virtual Class rooms have been established and 14 Virtual Class rooms are in progress. Also 25,000 trainee days through Capacity Building Programmes have been created.

Kerala Institute of Local Administration (KILA)

Kerala Institute of Local Administration (KILA) is an autonomous institution engaged in the capacity building activities for local governments (both rural and urban) in the State. Since its establishment in 1990, KILA has been engaged in capacity building interventions on local governance and decentralisation; including training, action-research, publications, seminars and workshops, consultancy, documentation, hand-holding and information services.

The training institutions viz; State Institute of Rural Development (SIRD) (renamed as Centre for Human Resource Development), Attappady Hills Area Development Society - Centre

for Comprehensive Participatory Resource Management (AHADS - CCPRM) and the three Extension Training Centres have been integrated with KILA.

In 2016-17, an amount of ₹22.00 crore and ₹2.00 crore was earmarked for KILA and Centre for Human Resource Development (erstwhile SIRD – including Central and State share) and the expenditure was ₹5.65 crore and ₹2.51 crore respectively. In 2016-17, 76 Training Programmes in 1,383 batches were conducted by KILA with a total number of 79,160 participants utilising 98,088 person days. Out of this, 12 training programmes are exclusively for national and international training, workshops and conference. Details of various training programmes conducted by KILA in 2016-17 and 2017-18 (up to August 31, 2017) are given in **Appendix 6.2.8** and **6.2.9** respectively.

Kudumbashree

Kudumbashree, the State Poverty Eradication Mission, was formulated with the objective of poverty eradication through the empowerment of women. It is an innovative, women based, participatory poverty alleviation programme launched by Government of Kerala in 1998 for the eradication of absolute poverty within a period of 10 years. The Mission focuses all its activities at three angles - the social, economic and overall gender empowerment of women. The Mission follows a process approach rather than a programme approach to meet its objective of poverty eradication. Unlike the traditional approaches, the Mission perceives poverty in a different perspective defining it 'as any deprivation'. The Mission strives to provide employment and address root causes of poverty thereby helping in social, economic and gender empowerment. Today 43.07 lakh women participate in the Kudumbashree movement in the State cutting across political ideologies and religious faiths. In 2016-17, an amount of ₹130.00 crore was earmarked to Kudumbashree for the State scheme and the expenditure was ₹124.25 crore.

Kudumbashree is also a nodal agency for implementing various Centrally Sponsored Programmes in the State. The programmes like National Rural Livelihood Mission (NRLM), Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDUGKY), Start-up Village Entrepreneurship Programme (SVEP) and Mahila Kissan Sasakthikaran Pariyojana (MKSP) were successfully implemented in rural areas through Kudumbashree.

Following are the major innovative programmes implemented through Kudumbashree Mission in the State.

- **Gender Resource Centre**

It is a space established in collaboration with Local Self Government Institutions to coordinate the activities for gender development and women empowerment under local government.

- **Micro-Placement Drive**

Micro placement drive is an endeavour which helps in arranging one or two employer at a small place for small number of job seekers. This concept also helps the DDUGKY candidates in obtaining jobs in their own locality.

- **Community based tracking system for DDUGKY**

DDUGKY is a Centrally Sponsored Scheme started in 2015-16. It aims at skilling rural poor youth and providing them with jobs in the organised sector. Kudumbashree through its CDS-ADS-NHG structure has organised numerous camps at the Grama, Block and District Panchayat level. Through this active participation in mobilisation and follow up, Kudumbashree could complete training for 21,617 students and placement for 12,000 candidates. Kudumbashree has launched a new scheme in which a pool of community based volunteers are involved in community tracking

and mobilisation. As part of this scheme each Community Development Society is advised to select one community volunteer and delegate the responsibility of mobilising, tracking and maintaining “Naipunya” register (skill register).

- **Livelihood – Kudumbashree Micro Enterprise (ME)**

Kudumbashree is well known for its micro enterprise activities. It has more than 30,000 micro enterprises. Among the micro enterprises, canteen units and tailoring units are the prominent ones. Kudumbashree plays a significant role in activities such as housekeeping services at Cochin Shipyard; services for Kochi Metro like housekeeping, ticketing, customer and crowd management, parking and canteen; services as front office staff in Regional Cancer Centre and fee collection and upkeep of the parking centres in Ernakulam and Thrissur railway stations etc. Such ventures have ensured revenue for Kudumbashree women and attracted public attention. Management of waiting halls of Thiruvananthapuram, Kollam, Ernakulam and Thrissur railway stations is now being done by Kudumbashree groups. Kudumbashree has a tie-up with Southern Railways in Thiruvananthapuram division for managing their parking areas and premium A/C waiting hall. This initiative provides employment to 82 persons providing monthly income in the range of ₹8,000 to ₹10,000 depending on the stations.

- **Micro-finance activities**

Micro-finance activities include Matching Grant, Linkage Banking, Thrift and Credit, Interest Subsidy Scheme, Financial Literacy Campaign and Yuvashree. There are 277,175 Neighbourhood Groups (NHGs), 19,854 Area Development Societies (ADS) and 1,073 Community Development Society (CDS). In 2016-17, 25,082 number of NHGs were graded and 35,689 number of NHGs were

linked with various banks and ₹1,334.75 crore was disbursed to NHGs as loan. An amount of ₹542.91 crore was disbursed as internal loan and ₹1,963.79 crore was provided as thrift. District-wise details about linkage banking and thrift and credit operation are given in **Appendix 6.2.10** and **6.2.11** respectively.

- **Balasabha**

In 2016-17, there were 44,234 functional balasabhas with the involvement of 6.47 lakh children. The District-wise details of balasabha are given in **Appendix 6.2.12**.

- **Tribal Special Intervention**

Attappady Skill Training Programme –

Under DDUGKY, Kudumbashree started a training centre in the Attappady settlement and offers domestic electrician, welding and plumbing courses. In this training centre, 60 students are currently undergoing training in these trades.

Tribal Mobilisation – Kudumbashree started “Door to Door” campaign and covered around 48 settlements (up to August 31, 2017). This helped Kudumbashree to enhance awareness to the community and attract more candidates to DDUGKY programme.

Bridge School and Bridge Course in Attappady

Bridge Schools were opened to bring dropout children back to the mainstream of education. There are three Bridge Schools functioning in the area with 63 students and TTC qualified teachers. Residential facilities are provided to the students. At present they are being registered to appear for the Equivalency Exams conducted by the Literacy Mission of primary, upper primary, 10th and 11th standard.

Bridge courses are conducted at hamlet as daily

tuition for the day scholars. Here apart from the curriculum, students learn the daily hygiene practices and are also provided food from the community kitchen.

Conclusion

There are numerous agencies and projects working in the domain of the livelihood enhancement and poverty reduction. Cross functionality and convergences of these agencies and projects have to be strengthened.

6.3 URBAN INFRASTRUCTURE

Infrastructure development is recognised as an essential factor to sustain economic growth of the country. Increasing urbanisation demands more investment in urban infrastructure development. Considering the special features of urbanisation and the geographical peculiarities of Kerala, the process of urbanisation in the State requires special attention while moulding various urban infrastructure development programmes. The specific pattern of urbanisation and high density of population of the State are huge challenges for the creation of urban infrastructure.

Urban infrastructure covers schemes like water supply, waste management systems, city sanitation plans, establishment and enhancement of public comfort facilities, implementation and improvement of sewerage schemes, storm water drainage schemes, effective parking policies and modern mechanised parking systems, beautification of cities and creation of green cities and non motorised urban conveyance. These schemes are implemented by departments. The major urban development programmes being implemented in the State are discussed below.

1. Atal Mission for Rejuvenation and Urban Transformation (AMRUT)

Atal Mission for Rejuvenation and Urban Transformation (AMRUT) is one of the initiatives of Ministry of Urban Development launched in June 2015. Project period of AMRUT is five years from the financial year 2015-16 to 2019-20 and 50 cities being taken up in AMRUT. Nine towns have been identified from the State for funding under AMRUT. The list includes 6 Municipal Corporations and Alappuzha, Palakkad and Guruvayoor Municipalities. The scheme aims at providing basic services to households and build amenities

in cities which will improve the quality of life for all, especially the poor and the disadvantaged. The scheme focuses to create infrastructure that leads to better delivery of services to citizens. The core infrastructure elements included are water supply, sewerage facilities and septage management, storm water drains to reduce flooding, pedestrian, non-motorised and public transport facilities, parking spaces, enhancing amenity value of cities by creating and upgrading green spaces, parks and recreation centers, reform management and capacity building.

Kerala has submitted three State Annual Action Plans during the period September 2015 to September 2017 which have been approved by GOI. Detailed Project Report was prepared for 255 projects, of which 217 projects got administrative sanction and 45 projects got technical sanction. In 2016-17, ₹3.08 crore was expended and cumulative expenditure incurred (as on August 31, 2017) was ₹5.58 crore.

2. Smart Cities Mission (SCM)

The Smart Cities Mission is a flagship programme of Government of India covering 100 cities for duration of five years (2015-16 to 2019-20). Kochi city was selected under Round I of the Smart city mission programme, focusing on Area Based Development and Inclusive Development and GOI released ₹2 crore for the preparation of smart city Plan for Kochi in 2015-16. Under the Area Based Development, heritage area of Fort Kochi and Mattanchery and the Central city area has been selected and decided to be interconnect ed with Water Metro. Under Inclusive Development Kochi smart city has identified urban mobility, tourism, urban transport and smart solutions as priority areas and prepared projects under these areas. The total project cost of ₹2,076 crore was submitted

and got approved from Government of India. Detailed Project Report was prepared for one project and administrative sanction and technical sanction were accorded for that project. In 2016-17, an amount of ₹1.75 crore was expended and cumulative expenditure as on August 31, 2017 was ₹1.89 crore. Thiruvananthapuram city has been selected in 2017-18 in the 3rd phase of Smart Cities Challenge. Thiruvananthapuram smart city proposal costing ₹1,538.19 crore has been approved.

3. Capital Region Development Project

The Capital Region Development Project (CRDP) was introduced in 2002 to improve the quality of life of people in the capital city by strengthening and improving the critical infrastructure like roads, water supply, solid waste management, surface water drainage, city beautification and bus terminals. In 2016-17 an amount of ₹1.71 crore and in 2017-18 up to 31-08-2017 an amount of ₹23.64 crore was expended under CRDP phase-I. Details of projects undertaken by Capital Region Development Programme (CRDP phase-I) are given in **Appendix 6.3.1**.

In 2012, second phase of the planning process under CRDP-II was conceived to start the integrated development process for entire capital region including the suburbs. The identified projects are classified into two groups viz. improvement of public mobility and road safety and economic development. This includes improvement of city roads, pedestrian safety infrastructure, junction improvement schemes, parking facilities and parking policy. Cumulative expenditure incurred as on August 31, 2017 was ₹4.99 crore.

4. Town and Country Planning Department

The Town and Country Planning Department has been initiating scheme for preparing master plans and detailed town plans, research and development, GIS and preparation of Local Development Plans

(LDP) and Integrated District Development Plans (IDDP). In 2016-17 and 2017-18, as part of the R&D work, preparation of parking policy for Kozhikode urban area was taken up and is under finalisation after consultation with stakeholders. Also study on paddy and wet land conservation/development in Kochi city region has been completed. Under Geographical Information System and Aerial Mapping scheme, steps have been taken to host all sanctioned/published Master Plans (either raster/vector format) for public viewing and develop interactive Web GIS (IMS) in consultation with Kerala State IT Mission. Under the Scheme 'Preparing Master Plans and Detailed Town Plans', development plans for 32 towns started in the first phase, 31 towns in the second phase and 24 towns in the third phase. Technical works of all master plans included in the first phase and 14 master plans of the second phase are completed and the remaining is under various stages of preparation. In 2016-17 an amount of ₹3.40 crore was provided and the expenditure reported is ₹2.96 crore i.e., 87.23 per cent of the outlay provided. In 2017-18, an amount of ₹3.65 crore was provided and the expenditure reported as on August 31, 2017 is ₹0.79 crore i.e., 21 per cent of the outlay provided. Master plans prepared under three phases are given in **Appendix 6.3.2**.

5. Development Authorities

The objective of the Development Authorities is to achieve sustainable and comprehensive development in the area, which comes under these authorities. The major activities undertaken by the Development Authorities are construction of shopping complexes, bus stands and terminals, parking plazas, development of plots for construction of buildings and widening of important roads in the cities etc. There were five Development Authorities earlier but the government has dissolved Calicut, Kollam and Thrissur Development Authorities and retained TRIDA and GCDA in 2017-18. In 2017-18, ₹150.25 crore was provided to the five authorities in the 12th Five-Year Plan period and the expenditure was ₹44.98 crore, i.e., 29 per

cent. In 2017-18 an amount of ₹25 crore and ₹7 crore were provided to TRIDA and GCDA respectively until August 31, 2017, no amount has been expended by TRIDA and GCDA. Details of major projects undertaken by TRIDA are given in **Appendix 6.3.3**.

6. Pradhan Mantri Awas Yojana – Urban (PMAY-U)

The scheme was started in the State on December 8, 2015 and is being implemented in all 93 Urban Local Government institutions in the State. The mission seeks to address the housing requirement of urban poor including slum dwellers with the mandate of providing housing for all by 2022. In June 2015, Government of India subsumed Rajiv Awas Yojana project with PMAY. 122 Detailed Project Reports for Beneficiary Led Construction (New) of 93 Urban Local Bodies for the construction of 36,918 dwelling units to the tune of ₹1,107.54 crore have been approved by the Ministry of Housing and Urban Affairs. In 2016-17, construction of 12,168 houses was started and 229 houses have been completed. Total project cost was ₹1,476.72 crore. Financial achievements under PMAY are given in **Appendix 6.3.4**.

7. Swachh Bharat Mission (Urban)

It is a Centrally sponsored sanitation scheme started by Ministry of Urban Development, with the aim of achieving and ensuring hygiene, waste management and sanitation across the nation. Individual household latrines (IHHL), community and public toilets, solid and liquid waste management and Information, Education, and Communication and capacity building are the main components under the Mission. The State Government declared the Rural Kerala Open Defecation Free (ODF) by November 1, 2016. As regards Urban Kerala, out of 93 ULBs, 92 ULBs declared ODF as on March 31, 2017 and 20 urban local bodies were certified by Government of India. A total of 29,456 IHHL have been completed against a target of 29,597 (93.2 per

cent). In 2016-17 construction of 26,681 number of toilets and in 2017-18 (up to August 31, 2017) 2040 numbers of toilets were completed. ODF status in urban is given in **Appendix 6.3.5**.

8. National Urban Livelihood Mission (NULM)

The Government of India has started the National Urban Livelihood Mission (NULM) by replacing the previous scheme Swarna Jayanthi Shahari Rozgar Yojana (SJSRY) for reducing poverty and vulnerability of the urban poor. In the first phase, the scheme was initiated in 14 selected cities and has been now scaled up to the rest of the 79 urban local bodies since November 2016. In the period under review, 4,987 new neighbourhood groups were formed, 333 individual and 39 group enterprises were established and 180 enterprises have been supported with interest subsidy loan. Under the component, 'Support to Urban Street Vendors' 19,838 street vendors was identified from 93 ULBs and ID cards distributed to 1,357 street vendors. Under the component, 'Shelter for Urban Homeless' (SUH) 3,195 street dwellers has been identified and 26 shelter homes are being supported under NULM in 10 urban cities. In 2016-17, an amount of ₹48.78 crore and in 2017-18 (up to August 31, 2017) an amount of ₹12.19 crore has been expended. Financial achievements under NULM are given in **Appendix 6.3.6** and the physical achievements in the review period are given in **Appendix 6.3.7**.

9. Ayyankali Urban Employment Creation Scheme

The State Government has launched the Ayyankali Urban Employment Guarantee Scheme in the pattern of MGNREG in 2009-10. It is intended to address the unemployment and under employment problems in the urban society. In the financial year 2016-17, an amount of ₹1,500 lakh has been earmarked for this scheme. The full amount has been expended through various Municipalities/Corporations. The fund has been utilised for

creating durable assets in local bodies. The total work days generated through this scheme as on August 31, 2017 is 4, 03,022. The local body-wise distribution of fund is given in **Appendix 6.3.8**.

Major Infrastructure Projects Discontinued from 2017-18.

The loan period of Kerala Sustainable Urban Development Project (KSUDP), ADB assisted project, had ended on 30-06-2016. Jawaharlal Nehru National Urban Renewal Mission (JNNURM), Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT), a sub-scheme of JNNURM, Rajiv Awas Yojana (RAY), Integrated Housing and Slum Development Programme (IHSDP) and Basic Services to the Urban Poor (BSUP) are the centrally sponsored schemes discontinued from 2017-18 onwards.

Under KSUDP, out of 102 packages sanctioned, 88 have been completed. Altogether 11 sewerage packages, and septage treatment plant in Kollam Corporation and solid waste management of Kollam and Thrissur corporations have to be completed. In 2016-17, the expenditure incurred was ₹27.19 crore. In 2017-18, for the winding up and completion of spillover works under KSUDP an amount of ₹87 crore was provided. Year-wise outlay and expenditure under KSUDP are given in **Appendix 6.3.9** and the status of major projects included under KSUDP is given in **Appendix 6.3.10**.

Under Jawaharlal Nehru National Urban Renewal Mission (JNNURM) Ist phase the bus projects of Thiruvananthapuram and Kochi alone were completed. Three projects were dropped and one was foreclosed due to public protest. The remaining projects are included in the spillover work. The expenditure incurred for the Ist phase in 2016-17 was ₹12.48 crore. Under the Transition Phase, 110 AC low floor buses and 279 Non-AC low floor buses were procured in Kozhikode, Kalpetta, Malappuram, Kottayam, Thodupuzha, Pathanamthitta, Kannur, Kasaragod,

Thrissur, Palakkad, Kollam and Alappuzha. The procurement of remaining buses is under process. The expenditure incurred for the year 2016-17 was ₹99.96 crore. In 2017-18, for the winding up and completion of spillover works under JNNURM an amount of ₹63 crore was provided. Year-wise outlay and expenditure under JNNURM are given in **Appendix 6.3.11** and the details of projects approved for implementation under JNNURM are given in **Appendix 6.3.12**.

Under the sub-scheme of JNNURM, Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT), five water supply projects have been completed and nine solid waste management schemes were foreclosed due to non availability of land and public protest. At present five water supply schemes and two solid waste management schemes are progressing as spillover projects. In 2016-17, an amount of ₹56.39 crore was expended. The cumulative expenditure reported as on August 31, 2017 is ₹453.28 crore. In the transition phase of UIDSSMT for a period of three years w.e.f April 1, 2014, six projects worth ₹184.47 crore were sanctioned and funds for solid waste management project worth ₹14.66 crore was released by Government of India. Year-wise outlay and expenditure under UIDSSMT are given in **Appendix 6.3.13** and the details of projects approved under UIDSSMT are given in **Appendix 6.3.14**.

Rajiv Awas Yojana (RAY) project started in June, 2010 envisaged a “Slum Free India” with inclusive and equitable cities. The scheme was launched in the State in 2011 with Kudumbashree as State level nodal agency. 811 slums in six corporations were covered under the scheme. In June 2015, Government of India has subsumed Rajiv Awas Yojana with Pradhan Mantri Awas Yojana (PMAY) (Urban). As on August 31, 2017, under RAY, 123 houses were constructed. Details of projects implemented under RAY are given in **Appendix 6.3.15**.

Integrated Housing and Slum Development Programme (IHSDP), Centrally Sponsored

programme aims at the holistic development of Slums in Urban areas. IHSDP is implemented in 45 ULBs. The projects are being implemented in the State with Kudumbashree as State level nodal agency. Three urban local bodies, viz; Koothuparamba, Malappuram and Thalassery have completed the project. Total project cost was ₹273.32 crore and the expenditure incurred was ₹169.37 crore (62 per cent).

Basic Services to the Urban Poor (BSUP) a sub-component of Jawaharlal Nehru National Urban Renewal Mission (JNNURM) aims at the integrated development of slums through projects for providing shelter, basic services and other civic amenities with a view to provide utilities to the urban poor. In Kerala, Thiruvananthapuram and Kochi corporations were identified for implementing BSUP. Total project cost was ₹343.67 crore and the expenditure incurred was ₹226.13 crore i.e., 66 per cent. IHSDP and BSUP schemes have been discontinued from March 2017 onwards. As on August 31, 2017, under IHSDP, 8,718 houses were constructed and 10,819 houses were renovated and in BSUP 18,004 houses were constructed and 809 houses were renovated. Details on the physical achievement of Integrated Housing and Slum Development Programme (IHSDP) and Basic Services to the Urban Poor (BSUP) are given in **Appendix 6.3.16**.

07 CHAPTER

TOWARDS A CLEAN KERALA



TOWARDS A CLEAN KERALA

A clean, healthy, and sustainable environment is now recognised globally and nationally as a basic entitlement of the people. Together with incomes and basic needs such as food, clothing, shelter, and health, a clean environment is an integral component of human well-being. The XIII Five-Year Plan aims to build a new Kerala – a litter free Kerala. Recognising the importance of scientific waste management in the State, this year's theme chapter is "Towards a Clean Kerala." Of late, waste management is one of the challenges faced by the State. A clear strategy needs to be devised to make Kerala the cleanest State in the country.

The terrain gradient, drainage density, runoff coefficient, frequent rain events, perennial streams and rivers etc succors a clean environment for the State of Kerala. Added to this is the concerted effort and achievements of the State in sanitation sector. Kerala was one of the first States in the country to fully do away with the dehumanising practice of scavenging as a culmination of people's movement for basic human dignity. Further, Kerala is one of the three open defecation free States in the country. Though the primary goal of sanitation is achieved, there are various secondary issues affecting the hygiene of the State. It includes increasing discharge of solid and liquid waste, cross-contamination of septage with groundwater, pollutant release from industries, vehicular traffic beyond the carrying capacity of roads, indiscriminate application of chemical fertilizers and pesticides etc. imposing serious restraints on the environmental cleanliness of the State.

Status of Waste Generation

Going by the definition of waste as any unwanted or unusable material, substances, or by-products at

a particular place and time, major waste streams include agricultural waste, food waste, electronic waste, biomedical waste, industrial waste and municipal waste.

Agricultural Waste

Agricultural waste in India is estimated to be around 620 Million tonne per annum (tpa), 43 per cent of which is animal dung and slaughter wastes (Singh and Prabha, 2017). Kerala produces about 99,198 tpa of animal meat and 11,89,115 tpa of bird meat and generates about 38,100 tpa of slaughter waste from 15,680 units (EcoStat-Kerala, 2014). The units include 2435 poultry stalls, 148 butcher shops, 685 meat stalls, 168 butcher shop cum meat stalls and 53 slaughter houses handling meat and poultry. 75.30 per cent of these units are functioning without any license. There are 809 units with no facility for waste disposal, 490 disposes to open pit, and 4,104 to closed pit. In addition, 8,700 units reported that they have other type of waste management facility which means that they are also to be considered as units without

any waste disposal facilities. Only 666 units work with treatment plants for waste disposal.

Biomedical Waste

Kerala has the highest number (about 27 per cent) of health care institutions in India. The total bed strength of hospitals in Kerala is 1,13,530 of which 43,273 are in the Government sector, 2,740 in the co-operative sector and 67,517 in the private sector (CPCB, 2011). It is estimated that each bed generates about 1.5 to 2 kg/day of solid waste and 450 litres per day of liquid waste. 85 per cent of the solid waste is non-hazardous, 10 per cent is infectious and 5 per cent is toxic. Accordingly, it is estimated that about 83,000 tpa of waste is generated in the hospitals of the state of which about 12,500 tpa is the biomedical waste which is infectious or toxic (Raveena, 2012). Almost 90 per cent of the biomedical waste generated in the state is handled by IMAGE, an agency established by the Indian Medical Association.

Industrial Hazardous Waste

Rapid industrialisation has resulted in the generation of large quantity of wastes, both solid and liquid, in industrial sectors. Despite requirements for pollution control measures, these wastes are generally dumped on land or discharged into water bodies, without adequate treatment, and thus become a large source of environmental pollution and health hazard. It is estimated that 10-15 per cent of the industrial waste generated in India (4.43 million tpa) is hazardous and its annual increase varies from 2 to 5 per cent (EAI, 2010). Kerala generates hazardous waste to the order of 71058 tpa from 542 industrial units. In this, 71 per cent of the hazardous waste generated is landfillable, 24 per cent is recyclable and 0.3 per cent is incinerable (Khanna et.al. 2009; Ratnakar & Dharmendra, 2012). About 64 per cent of the hazardous waste generated in Kerala is in Ernakulum district followed by 26 per cent in Kollam district and 4 per cent in Thiruvananthapuram district. A Common Treatment, Storage and Disposal Facilities (TSDF)

is being established at Ernakulam and 17 units have their own TSDF. There is also one common and one captive incineration facility in the state with capacity of 250 tpa and 1500 tpa respectively (KSPCB, 2010).

Electronic Waste

India generates about 1.85 million tpa of e-waste and ranks fifth in the world among top e-waste producing countries. It is projected that by 2020 the e-waste generation in India will be 5.2 million tpa. Unorganised sector accounts for 95 per cent of India's e-waste. The number of mobile phone users in India, 1.1 billion in 2016, is 4 times that of United States. There are 57 million computers in use and plethora of other gadgets and consumer electronics. India accounts for roughly 4 per cent of e-waste generated annually (Agarwal and Ghosh, 2016; Ghosh, 2017)). An ASSOCHAM-KPMG study indicates that 70 per cent of the total e-waste generated in India is contributed by computers and 12 per cent by telecommunication equipment. There are no specific estimates on the generation of e-waste in Kerala. Considering the fact that 32.6 per cent of the households in Kerala have both land and mobile phones against a national average of 11.7 per cent and 20.4 per cent have computer connectivity as against the national average of 18.7 per cent, the e-waste is becoming a major solid waste stream in Kerala. Much of the e-waste generated is recyclable. In order to facilitate this, 178 dismantler/recycler agencies are enlisted for handling 438,086 tpa of e-waste, i.e. 24 per cent of the total generated. It indicates that most of the e-waste is ill-managed in the unorganised sector. Kerala does not have a e-waste disposal plant and the waste mostly goes into unorganised market for crude dismantling, recovery and reuse (Patel and Balachandran, 2016).

Municipal Solid Waste

Currently, 1,30,000 tpd (47.5 million tpa) of municipal solid waste (MSW) is generated due to various household activities and other commercial

Table 7.1
MSW Generation in Kerala

Region	Population (2011)	Per Capita MSW Generation (gram/day)	Total MSW Generation (TPD)
Corporation	3011629	470	1415
Municipalities	12923297	350	4523
Grama Panchayats	17471135	235	4106
Total	33406061		10044

Source: Varma, 2013

and institutional activities (CPCB, 2012). Studies indicate that 1 per cent increase in the national income increases MSW by 0.7 per cent. Studies carried out in 59 cities indicated that there was 2.94 times increase in the MSW generation over a decade from 2001 (Joshi and Ahmed, 2016). It is also indicated that 51 per cent of the MSW generated is compostable, 18 per cent recyclable and 31 per cent inert. Among the recyclables, 6 per cent is paper, 3 per cent is textiles, 1 per cent is leather, 4 per cent is plastics, 2 per cent is metals and 2 per cent is glass materials. The MSW contains 47 per cent moisture and its calorific value is only 1751 Kcal/Kg (CPCB, 2013). A comprehensive sectoral status study on solid waste management sponsored by the Water and Sanitation Project-

South Asia of the World Bank estimated the MSW generation as 400 gpd in major urban centres, 300 gpd in municipalities and 200 gpd in rural areas (SEUF, 2006). Detailed sampling studies in major urban centres of the State indicated that the waste generation is almost 17.5 per cent higher (Varma, 2014). Accordingly, the total MSW generation in Kerala is given in **Table 7.1**. The annual MSW generation in Kerala is 3.7 Million tons.

Compilation of various studies indicates that the sources of MSW are dominated by households where almost 50 per cent of the waste is generated. It is also indicated that almost 83 per cent of the waste is generated in specific sources (**Figure 7.1**). The type of waste generated is

Figure 7.1
Sources of MSW Generation

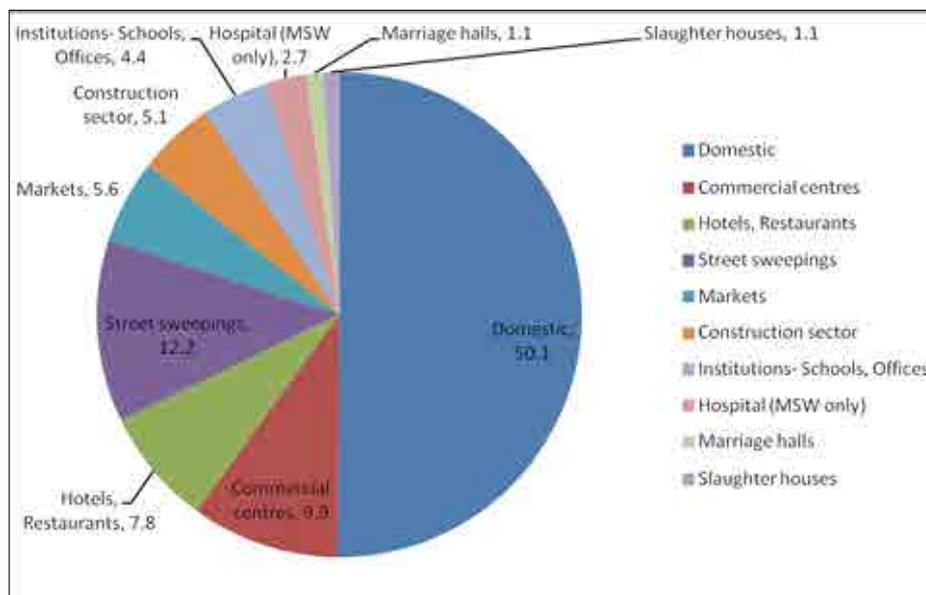


Figure 7.2
Type of MSW Generated in Major Urban Centres

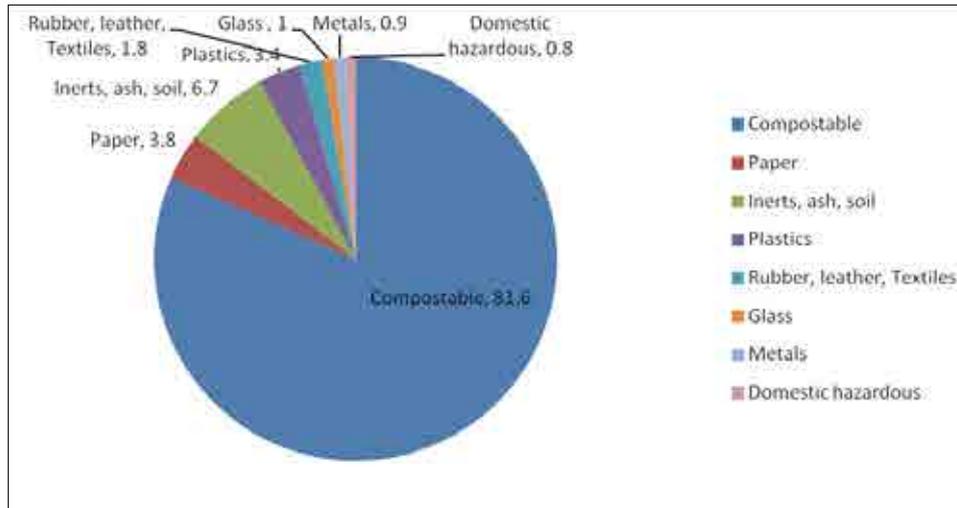
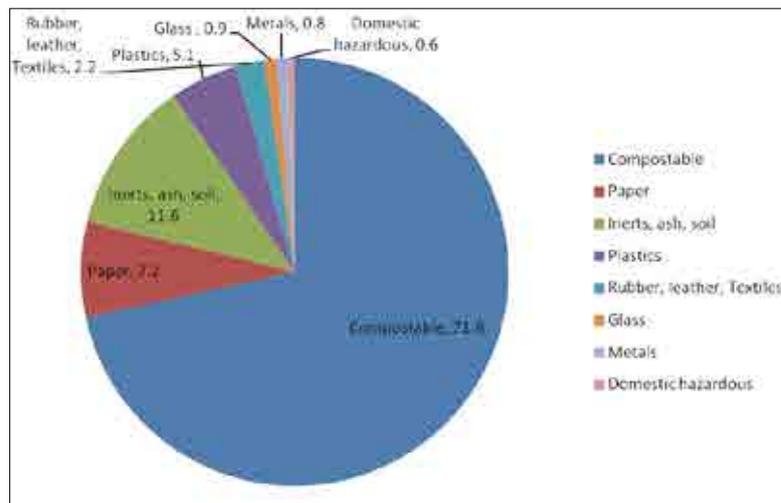


Figure 7.3
Type of MSW Generated in Smaller Urban Centres



dominated by compostable and the quantum varies for major and minor urban centres (**Figure 7.2 and 7.3**). The moisture content of the waste varies from 55 to 70 per cent and the average calorific value is around 1700 Kcal/Kg. The compostable part of the waste is dominated by food waste. It is predicted that Asian countries will experience largest increase in food waste production by 44 per cent i.e., from 278 million to 416 million tons between 2005 to 2025, there by the CH₄ emission will enhance from 34 million to 48 million tons (Kiran et.al., 2014).

Septage and Fecal Sludge

Kerala has generally a homestead type of habitation pattern and it is characterised by a residential house attached with dug well and toilet facilities. The toilets are mostly pour flush and connected to septic tanks or single or twin-leach pits. In Kerala, about 78 per cent of the households resort to confinement of excreta within their premises using on-site sanitation system (OSS). The National Sample Survey 69th Round (2012) indicated that 97 per cent of the rural households and 99 per cent

Table 7.2
Details of the Type of Sanitation Facilities in Kerala

No	Type of Facilities	Rural	Urban	Kerala	India
1	No. of Households	4095674	3620696	7716370	167826730
2	Piped Sewer System (%)	9.9	14.3	12.0	11.9
3	Septic tank (%)	44.6	56.7	50.3	22.2
4	Pit latrine (%)	33.0	21.4	27.2	7.6
5	Open pit (%)	1.0	0.4	0.7	1.8
6	Open drain/Others (%)	4.7	4.5	4.6	0.5
7	Public latrine (%)	1.2	0.9	1.0	3.2
8	Open defecation (%)	5.6	1.7	3.8	49.8

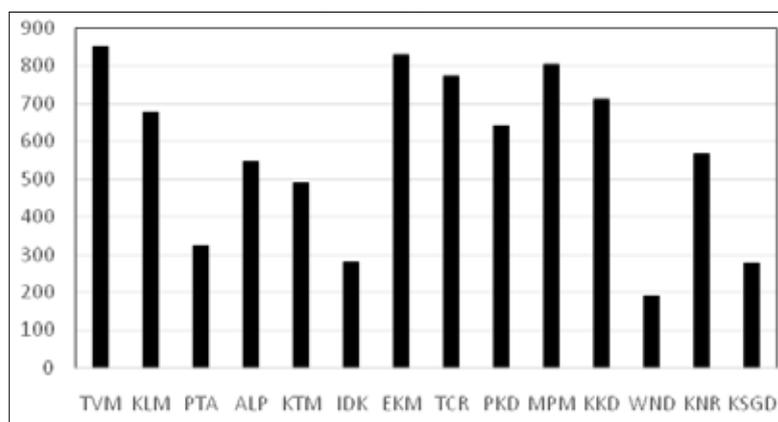
Source: Census, 2011

of the urban households in Kerala have access to improved toilet facilities against a national average of 39 per cent and 90 per cent respectively. The details of the type of sanitation facilities in Kerala is given in **Table 7.2** (Census, 2011). Though Kerala is now an open defecation free State with all the houses having toilet facilities, the onsite sanitation system necessitates confinement of the septage in septic tanks and fecal sludge in toilet leach pits.

Varma (2015; 2016) have evaluated the status of septage generation and management in Kerala. There are about 39.5 lakh septic tanks and 23 lakh pit latrines in the State as per the Census data. However, the septic tanks reported do not comply with standard scientific specifications. The excreta

confinement capacity of septic tanks and latrine pits vary considerably depending on the terrain, land availability, financial aspects of the household. Normally, the size of the septic tank in individual houses ranges from 1 to 4 m³ and that in a public office setup or apartment buildings from 10 to 100 m³. Generally, the frequency of emptying septic tanks vary from 2 to 10 years depending on the volume, usage and awareness on the requirement of desludging. The latrine leach pits are emptied in 10-20 years when the pits get fully filled and become unusable. The volume of leach pits varies from 1-10 m³. Generally, in low lying and coastal areas, the depth of the leach pit is restricted due to groundwater table and in such pits, desludging becomes necessary in shorter frequency. The total volume of septage/fecal sludge that needs to be

Figure 7.4
Septage Generation in Various Districts (m³/day)



emptied from septic tanks or leach pits every day in Kerala is around 7966 m³ (Varma, 2016). It is also estimated that urban areas in 6 out of the 14 districts (Trivandrum, Alappuzha, Ernakulam, Thrissur, Kozhikkode and Kannur) account for 70 per cent of daily septage clearance demand. In the other districts, the generation is far higher in rural areas compared to urban areas. The district wise pattern of septage generation is given as **Figure 7.4**.

Wastewater Generation

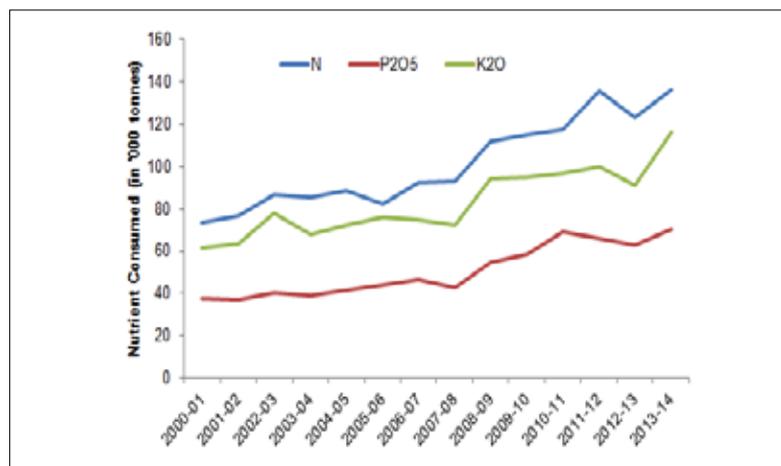
In addition to the septage and fecal sludge that is collected in the septic tanks or leach-pits, there is also wastewater generated in kitchen, bathrooms etc. and overflow from soak pits, septic tanks and leachpits. An inventory in three Grama Panchayats, two Municipalities and one Corporation indicates that waste water generation in urban and rural areas is 129 lpcd and 127 lpcd respectively of which 60 per cent is considered as grey water portion (CWRDM, 2011). Accordingly, the waste water generation in the State is projected as around 4.3 Mm³/day, of which grey water generation is around 2.6 Mm³/day. Given that population in urban and rural areas are more or less the same, their contribution is almost equal in the daily generation. Similar to septage generation, the

urban population in 6 districts contribute to 66 per cent of the daily waste water generation. It is also indicated that about 45 per cent of the grey water is being discharged to leach pits, 25 per cent to drains and 30 per cent to open space (Harikumar, 2015).

State of Pollution

In addition to the various types of wastes, there are pollutant discharges that affect the environmental cleanliness and aesthetics of Kerala, in turn, reducing the assimilative capacity of environment. The assimilative capacity refers to the maximum amount of pollution load that can be discharged to an environment, such as air, water, land, noise, biota, etc. without violating the best designated use of such resources in a region. Accordingly, the assimilative capacity of water is the ability of a water body to cleanse itself or its capacity to receive waste water or toxic substances without deleterious effects and without damage to aquatic life or humans who consume the water. Similarly, for air, it is the maximum amount of pollutant gases that can get diluted, dispersed or absorbed by air without compromising its best designated use. For land, it is the upper limit of extraneous constituents which could be accommodated in the soil matrix without impairing its productivity.

Figure 7.5
Fertiliser Nutrient Consumption (in thousand tonnes)



Soil Pollution

Kerala is endowed with ten soil types of diverse potential. The increased pressure on land for accelerated productions has led to deterioration of soil quality and soil pollution. The fertilizer nutrient consumption in Kerala in the past few years is given in **Figure 7.5** (After IPNI, 2017). The total fertilizer nutrient consumption was 266,200 ton in 2013-14 in Kerala (124,000 ton of N, 55500 ton of P₂O₅ and 86,700 ton of K₂O). The overuse of fertilizers reduces the intrinsic productivity of soil and the excess potassium content in soil decreases Vitamin C and carotene content in vegetables and fruits. The fact that about 170 Kg of fertilizer is applied in each hectare of arable land in Kerala shows that the soil pollution possibility is very high in the State. Since 1940, there was widespread usage of pesticides, insecticides and herbicides against the attack from insects, fungi, bacteria, viruses, rodents and weeds. DDT (dichloro-diphenyl-trichloroethane), gammaxene etc. dominated the scene then. Subsequently, formulations such as BHC, chlorinated hydrocarbons, organophosphates, aldrin, malathion, dieldrin,

furodan, endosulfan etc. became popular. At least 46 different formulations of pesticides were commonly used in Kerala (Indira Devi, 2010). As the unwanted populations become resistant to the formulations, either more quantity or new formulations are used to counter the menace. The usage of pesticide varied from 724 tpa in 1991-92, 1,381 tpa (1994-95), 272 tpa (2003-04), 695 tpa (2012-13) and 1,162 tpa in 2013-14). It includes 73 per cent fungicide, 16 per cent insecticide and 11 per cent weedicide. Generally, the quantity applied is much more than the requirement, with 95 per cent excess in the case of insecticide, 96 per cent in the case weedicide and 42 per cent in the case of fungicide. It is recorded that in 2009-10, Kerala used 627 ton of fungicides, insecticides, weedicides etc.

Water Pollution

Kerala faces a two-fold issue in water security: decreasing water availability and increasing water pollution. Kerala has a dense network of fluvial system as given in **Table 7.3**. Most of the water sources in the State are subjected to

Table 7.3
Fluvial System Network in Kerala

No	Type of water body	No.	Area (Ha)
1	River system	44	85,000
2	Reservoir	53	42,890
3	Private pond	35,763	21,986
4	Panchayat pond	6,848	1,487
5	Holy pond	2,689	480
6	Quarry pond	879	34
7	Village pond and other water hold	185	496
8	Irrigation tank	852	2,835
9	Freshwater fish farm (Public)	13	85
10	Freshwater lake	13	85
11	Check dam storage	150	486
12	Bunded water hold	70	879
13	Total		158,358

Source: SPB, 2014

severe environmental stress due to pollution and shrinkage. Water pollution in the State is mainly from industrial effluents, domestic waste flow and sewage and agricultural run-off.

Wastewater from industrial activities is often contaminated with highly toxic organic and inorganic substances, some of which are persistent pollutants and remain in the environment for many years. There are 52,348 industries, those come under the pollution control norms in Kerala of which more than 96 per cent are small industries category. There are only 851 large industries and 951 medium industries in the State (KSPCB, 2016). These industries discharge 6.5 million m³ of industrial effluents into rivers and estuaries of Kerala on a daily basis. Ten major industries in Kochi alone generate effluent to the tune of 57,000 m³/day of effluent. These discharges carry heavy load of ammonia (432 – 560 mg/l), petroleum hydrocarbon (14.4 mg/l), fluoride (1.5 mg/l), nutrient concentrations in terms of nitrite (6.5 µmol/l), nitrate (6.44 µmol/l), phosphate (27.8 µmol/l), silicate (534.9 µmol/l) etc. Over the years, most of the large and medium industries installed effluent treatment plants. However, the old discharges and lack of compliance at times have caused significant accumulation of heavy metals in sediments of water bodies (**Table 7.4**). The higher organic carbon in sediments also contributes to the estuarine pollution. The very high organic carbon residuals of about 10 per cent in the eastern part of Ashtamudi Lake is

attributable to the accumulation from organic rich effluents from Punalur Paper Mills, when it was operational.

The 69 lakh septic tanks and toilet leach pits confine about 8,000 m³/day of septage and fecal sludge. These pollutants when encounter water table cause cross-contamination by pathogenic bacteria, viruses, protozoa and several more complex multicellular organisms (Varma, 2016). More than 90 per cent of the shallow dug wells are associated with bacteriological contamination in Kerala (Harikumar, 2016). Studies indicated that 56 per cent of the contamination cases are due to unscientific construction of latrines, 11 per cent due to animal sources and 33 per cent due to both latrine and animal sources (Harikumar and Kokkal, 2009). 46 per cent of the wells located within a distance of 7.5 m and 12 per cent wells located beyond a distance of 7.5 m from the latrine pits showed the presence of E-coli. The mechanical desludging operations removes about 500 m³/day of septage/fecal sludge in the State currently. There is only one small septage treatment plant at Brahmapuram, Kochi with 100 KLD capacity and in Thiruvananthapuram, the Sewage Treatment Plant receives part of the septage/fecal sludge. Therefore, most of the septage/fecal sludge removed ultimately reaches water bodies clandestinely. Consequently, the water bodies of the State receives solid and BOD load of 3,150 tons and 2,100 tons respectively. The untreated solid waste around 4,100 tpd causes the generation

Table 7.4
Accumulation of Heavy Metals in Sediments of Water Bodies (Concentration in mg/l)

Metal	Akkulam	Beypore	Ashtamudi	Vembanad	Average
Chromium	39-118	--	80-155	85-120	90
Lead	88-243	43-172	29-98	30-165	20
Zinc	71-109	79-187	57-208	35-780	95
Copper	20-39	3-9	20-42	27-49	45
Cadmium	--	--	4-27	5-8.5	0.3
Mercury	0.09-0.27	0.05-2.0	0.22-0.85	0.12-11.5	0.4

Source: Varma et.al. 2007

Box 7.1

Brahmapuram Model Septage Management Facility

Considering the serious issue of septage and fecal sludge management, the Kochi Corporation with the financial assistance of KSUDP has taken a lead to install a model pilot Septage Treatment Plant at Brahmapuram costing around ₹4.2 crore. The plant inaugurated in 2015 has a capacity of 100 KLD. The capacity is adequate only to about half lakh households/institutions. It receives 10-20 tanker loads of septage on a daily basis with a payment of ₹400 per load. The treated water is disposed to public drain as stipulated by the Pollution Control Board and the sludge removed is stored to be composted and used as manure after testing. Installed, operated and maintained by IMG Engineering Limited, Thiruvalla, it is the first ever septage treatment plant in Kerala for treating septage and fecal sludge collected from septic tanks and toilet leach pits.

of leachates to the tune of 2,200 m³/day or about 11 tpd of chemical oxygen demand (Varma, 2017). There are also localised water quality problems associated with excess iron, low pH, excess fluoride and salinity intrusion. There are also pollution linked to the fertilizer and pesticide residues from agricultural activities and nutrient discharges from the solid and liquid waste streams. As a result, most of the water bodies in the State exhibit exorbitant growth of aquatic plants and subsequent eutrophication.

Air Pollution

In Kerala, the assimilative capacity of air is generally good due to favourable meteorological factors and high density of trees with superior leaf area index. The ambient air quality monitoring carried out at 30 stations indicates that the annual average concentrations of sulphur dioxide, oxides of nitrogen, carbon monoxide and ozone are not exceeding the desirable limits (KSPCB, 2012). However, the annual average values of respirable suspended particulate matter are found exceeding the limit at seven stations in the State, i.e., one spot at Thiruvananthapuram, 5 spots at Ernakulam and one spot at Thrissur. The major causative factor for the increase being the road congestions and burning of hydro-carbons mainly from vehicular movement. In the most industrialised region

of the State, Kochi, the emission load from vehicular sources is 4 times higher than that of industrial sources. Historically, the number of vehicles in Kerala was low, only 0.24 lakh in 1960, 5.81 lakh in 1990, 19.1 lakh in 2000 and 53.98 lakh in 2010 and 102 lakh in 2016. While road length in Kerala increased by 66 percent between 2005-06 and 2012-13 (from 160,944 km to 243,373 km), the number of motor vehicles increased by 157.8 percent, i.e. from 3,122,082 lakh in 2005 to 8,048,673 lakh in 2013. According to latest estimates every day about 3,171 vehicles are newly added in the State. Consequent to the increase in vehicles, 40 lakh litres of petrol and 80 lakh litres of diesel are sold through 3,100 retail outlets in the State every day. Studies indicate that two-wheelers are dominant source of emissions of Mobile Source Air Toxics (MSATs)-formaldehyde (37 per cent), hydrocarbons (35 per cent) and acetaldehyde (64 per cent). Private cars are responsible for majority of the carbon monoxide (34 per cent), benzene (48 per cent), and total aldehyde (40 per cent) emission. Heavy-duty commercial vehicles (HCVs) emit nearly 46 per cent of all particulate pollutants. Studies also show that the cars (30-34 per cent) produce the highest CO₂ emissions (Anon. 2016, KSPCB, 2012). The higher fugitive dust emissions are also observed in places of poor road conditions, construction sites, earth excavation sites etc.

Environmental Impact of Pollution

Impact on Health

Though the State could address effectively the first-generation issues with respect to human excreta disposal, there are serious second-generation issues of water pollution. The level of solid and liquid waste generation is high even in rural areas corresponding to the relatively higher standard of living in the State. The magnitude of land, water and air pollution is also relatively high leading to dwindling environmental assimilative capacity. The level of morbidity is high in Kerala and the disease burden is on the increase. While Kerala made remarkable achievements with respect to mortality and fertility, the “low mortality and high morbidity syndrome” given the higher level of literacy, better healthcare infrastructure and higher utilisation of health care services is attributable directly or indirectly to the issues in sanitation and environmental pollution in the State. Over the last few years, there have been increase in prevalence and incidence of communicable and non-communicable diseases in the State, such as diarrheal diseases, hepatitis, pulmonary tuberculosis, malaria, dengue, Japanese encephalitis etc. The increase in respiratory and water-borne diseases are directly attributable to the lack of sanitation and hygiene, environmental pollution and unsafe drinking water.

Impact on Ecosystem

The haphazard construction of roads and various hydraulic barriers are causing serious flushing inadequacies and many of the drainage systems are dilapidated and clogged. The indiscriminate and increased discharge of organic wastes and fertilizer residues into water bodies are causing incessant weed growth and rampant eutrophication issues in Kerala. The huge BOD load and silt inflow are causative factors for the shrinkage of water bodies. The post 1990 period witnessed a rapid growth of the services sector (and allied components in the secondary sector- for example construction) and

consequent increase of waste causing pollution of water, choking of drainages, water logging, increase in the incidence of vector borne communicable diseases and so on. In terms of some of the key indicators like water quality, increasing incidence of communicable diseases etc., Kerala is becoming a less livable place. Climate change, especially the increasing frequency and intensity of extreme climatic events is adding a new dimension. Realising the criticality of sanitation and hygienic environment, the State over the years have taken various interventions to address the issues.

Impact on Tourism

Environment constitutes the inner value, the ground on which the tourism is built, particularly in Kerala. Therefore, the environmental resources form the capital of tourism sector in Kerala. The brand name of tourism in Kerala “God’s Own Country” is an implicit invitation to enjoy the boundless natural beauty of the State. Therefore, adverse impacts on any ecosystem decelerate the growth of tourism in the State. Accumulation of waste at places, roads and public places with waste litters, polluted water bodies, stagnant contaminants, eutrophication of lakes and water ways etc adversely affects the aesthetic appearance and hygienic environment of locations. This, in turn, impacts the tourism destinations adversely. Kerala has adopted Responsible Tourism (RT) as the bed rock of its tourism policy. It involved sustainable resource use, waste reduction, conserving natural diversity. However, RT practices are yet to be spread beyond pilot destinations.

Measures Undertaken

Institutional Reforms

The sanitation history of Kerala dates back to 1900 when bucket type latrines were first introduced in Trivandrum. It progressed well in selected pockets with the support of international agencies and got a fillip during the People’s Plan Campaign since 1996 when the responsibility of

sanitation was devolved to the local governments. The government launched Kerala Total Sanitation and Health Mission (KTSHM) to support the local governments for achieving improved hygiene through behavioral change in sanitation practices. The effort of KTSHM took the State to a near open defecation free status by achieving almost 97 per cent toilet coverage, much ahead of all other states. The menace of solid waste was increasing and the local governments, mostly were not having technical support, trained manpower and financial capacity to deal with the situation. Consequent to the increased inflow of plastics to the municipal waste and reduced consumption of market waste in agricultural activities, two major cities of the State, Njeliyanparamba, Kozhikkode and Vilappilsala, Trivandrum set up centralised composting plants in the year 2000. In 2004, Government launched the Clean Kerala Mission (CKM) for providing technical support and gap fund to the local governments for complying with the provisions of Municipal Solid Waste (Management and Handling) Rules, 2000. It

facilitated the establishment of a few centralised plants and decentralised waste management systems, especially in markets and institutions. In 2006, a detailed sectoral status study on municipal solid waste management was taken up with the support of Water and Sanitation Programme - South Asia of the World Bank. The results of the study and the experience of KTSHM and CKM enabled the State to prepare a comprehensive Zero Waste Kerala (Malinya Muktha Keralam) Action Plan in 2007. Accordingly, an institutional reform was effected by merging KTSHM & CKM and forming the Suchitwa Mission (SM) in 2008. The Suchitwa Mission evolved an Overflow Waste Management (OWM) strategy thereby thrust was on segregated collection and storage of waste and treatment of bio-degradable at source as far as possible. While this strategy was gaining acceptance, there were buildup of local agitation due to poor social and environmental safeguards at some of the centralised waste management system. Consequently, the Government in 2012 declared its intent to install centralised waste to

Box 7.2 **Alappuzha Municipality**

Known as ‘Venice of the East’, the Alappuzha town, characterised by 2 big and 104 small canals, on the banks of Vembanad Lake is regarded as a tourist paradise. The closure of the centralised waste management and dumping facility at Sarvodayapuram in 2012 necessitated an alternative as the city was generating around 60 ton of Municipal Solid Waste (MSW) per day. Under the leadership of the Member of Legislative Assembly from Alappuzha, a campaign namely “Clean home- Clean City” was launched to take up the challenge of managing the MSW without any infrastructure support. With the help of Suchitwa Mission, 3000 domestic biogas plants and 2800 pipe compost units were installed first and its use ensured. Subsequently, 18 units of 220 aerobic bins, known as ‘Thumboormoozhi model’ were installed and its operation and maintenance supported. The non-biodegradables around 14 tons per day is regularly transferred to 10 mini and one centralised Material Recovery Facility (MRF), installed adjacent to the aerobic units. Further, more aerobic bins are installed and action taken to promote source treatment at least at 50 per cent of the households. The sanitary workers of the Municipality, Kudumbasree Service Team, School Watsan Clubs play major roles in sustaining the system. With the success of Thumboormozhi model of composting, it is now being replicated elsewhere in the State. The model has been mentioned on the website of the United Nations Environment Programme.

Box 7.3**Vilappilsala Waste Management Plant**

Trivandrum Municipal Corporation (TMC), in the year 2000 established an aerobic composting plant at Vilappilsala to treat the Municipal Solid Waste (MSW) generated in the city. The plant, built under BOT scheme, claimed to have a capacity to treat 300 tonnes of MSW per day. The operator used to claim compensation for short-supply of MSW by the TMC. The operator, instead of treating the entire MSW received in the plant, was dumping a considerable portion within the compound. The plant did not have any environmental management system to abate the pollution due to huge quantity of leachate, mitigate the adverse impacts of the open dump, manage the plastics and other non-biodegradables, landfill the discards safely and such other issues. A technical committee, later found that the plant had a capacity to treat only 150 tons of biodegradable waste per day. The increasing pollution load, nuisance to the neighboring population, poor operation and maintenance forced the local people to agitate against the plant. Though the TMC took over the plant, it was too late to bring back the operation to a convincing environmental safeguard level and ultimately the plant was closed in 2012.

Box 7.4**Overflow Waste Management Option**

Applicable to the biodegradable waste, an overflow management option envisages the reduction of waste at source, as far as possible, by enforcing and facilitating its management at the smallest unit source. The overflow from these sources are managed at the next higher unit, to the extent possible, in small collectives and further in a next higher collective unit and finally the left over, if any, go to a centralised system. Thereby, the necessity of and pressure on the centralised system will reduce progressively. It means that a local government who enables the management of waste at source with maximum efficiency can get away without a centralised system. However, the reusability and recyclability of non-biodegradables improves with increasing quantity which demands a centralised facility.

energy plants, but it did not happen. Subsequently, the Government modified the waste management strategy and assigned the responsibility of waste management to the producer. In line with this, the Suchitwa Mission extended assistance to local governments and many of the local governments initiated actions. One notable example is the Alappuzha Municipality which got recognition from the United Nations as one of the five cities in the world that are working towards curbing pollution through sustainable solid waste management practices.

Suchitwa Mission is the nodal agency of the government for spearheading the sanitation and

waste management programmes of the State. The Mission conceives and designs various programmes for improving the solid and liquid waste management capabilities, enhancing the awareness to bring about improved behavioral change in sanitation, building the capacity of local governments to tackle existing and emerging issues in sanitation and waste management and organising intensive cleaning drive to maintain the agenda of societal hygiene and environmental cleanliness. The Mission is also the nodal agency to implement the centrally sponsored Swachh Bharath Abhiyan, both for urban and rural sector. The Government of India also has supported the

mission to have a Communication and Capacity Building Unit (CCDU) for sanitation.

Suchitwa Keralam Scheme

The major initiative under the scheme is management of Municipal Solid Waste (MSW). The local governments are enabled to prepare Detailed Project Reports (DPRs) for designing holistic or issue based waste management solutions as well as for construction or modification of waste treatment plants. The mission scrutinises and improvises the DPRs and provides technical approval and financial support up to 100 per cent. The schemes include installation/upgradation of treatment plants at the household, institutional and community level (source level) for biodegradable waste and material collection and recovery facility (MRF) including plastic shredding units for non-biodegradable waste and electronic wastes. The Mission also supports development of sanitary landfill, green belt for waste management yard etc.

The Mission promotes source level segregation and treatment of bio-degradable fraction of solid waste at households, flats, residential colonies, institutions, hospitals, markets and schools. These initiatives, are encouraged by providing 75 per cent subsidy for biogas plants (50 per cent by Suchitwa Mission Subsidy limited to ₹5,000 and 25 per cent by the local governments). In the case of source level composting systems using ring composting, bucket bin composting, pot composting etc., 90 per cent subsidy (75 per cent by Suchitwa Mission and 15 per cent by Local Governments). The institutions such as hotels, chicken stalls, hospitals, schools, offices, hospitals are being encouraged to set up source level treatment facilities by offering a subsidy at the rate of 50 per cent subject to a maximum of ₹1 lakh.

The meat/egg requirements of the State are mainly met by the animals/poulties from neighboring States. These animals/poultry are processed in local slaughterhouses, and majority of them are without any license or registration. The Committee appointed by the Hon'ble Supreme

Court estimated that yearly, about 4 lakh tone of mutton and 6 lakh tone of beef are produced in Kerala by slaughtering 26.5 million goat and sheep and 3 million cattle in the State. The Committee observed that most of the slaughter houses in the State currently are inadequate, unhygienic and not equipped with adequate facilities as per norms for modern abattoirs. Considering the population and meat requirement, there is a minimum requirement of 7 large abattoirs, 22 medium abattoirs and at least 225 small abattoirs. Suchitwa mission along with Directorate of Urban Affairs is providing technical and financial assistance to build modern abattoirs for which funds are being made available under Kerala Infrastructure Investment Fund Board (KIIFB).

Suchitwa mission along with Directorate of Urban Affairs is also providing technical and financial assistance to build modern crematorium for Local Governments, especially the LPG based ones.

Kerala generates about 8,000 m³/day of septage/fecal sludge and currently there is only one facility of 100 KLD capacity at Brahmapuram, Kochi. The Sewage Treatment Plant at Thiruvananthapuram also receives septage removed by the vacuum suckers made available by the Corporation of Thiruvananthapuram. The mission is entrusted to address the issue but the progress is quite inadequate. In addition, the liquid waste, mostly the grey water, generated in hospitals, slaughter houses, residential colonies, institutions etc are let out to the environment posing very serious threat to the water bodies. The Mission provides technical and financial assistance for preparation of Detailed Project Report for institutional liquid waste management system and their implementation.

Suchitwa Mission also organises pre-monsoon cleaning campaign and observance of dry day through the local governments to prevent proliferation of mosquitoes and other vectors during monsoon season to control the spread of contagious diseases. The Mission also campaigns for improved sanitation behaviour, popularise green protocols, waste management at sources, reduction of disposables including plastics,

production and sales of eco-friendly products (cloth bags, paper bags, paper pen etc.).

As most of the non-biodegradable waste including plastics generated in the State has good recycling value and since recycling is one of the most environment friendly activities, mission is taking various initiatives to promote this. The Mission provides technical and financial support for establishment of Material Recovery Facilities (MRF) where the non-biodegradables waste from local governments could be gathered, sorted and made available for reuse or recycling.

In order to enable the Local Self Government Institutions (LSGIs) to build and operate improved sanitation and waste management systems, the Mission strengthened its Technical Support wing. It has accredited experienced agencies that can extend service to the LSGIs as well as enlisted service providers with capabilities in establishing various waste management installations. The mission, with the help of technical experts in the sector, scouts for newer technologies and agencies and enlist them as service providers for providing more and modern technology options for the LSGIs and other institutions. The Mission also organises continuous capacity building activities to all stakeholders and established a pool of resource persons in every districts who are available for supporting the local governments.

Swachh Bharath Abhiyan (SBA)

It is a campaign to eliminate open defecation in the country through construction of household and community-owned toilets and ensuring its use and cleanliness. The campaign also aims to clean up the streets, roads and infrastructure of the cities, towns, and rural areas of the country. The mission is a continuation of the Total Sanitation Campaign with augmented campaign support, coordinated vigil, strict monitoring mechanisms and innovative challenge methods. Launched on October 2, 2014, the SBA is supported by the Government of India and State Government to achieve an Open-Defecation Free (ODF) India

by October 2, 2019, the 150th anniversary of the birth of Mahatma Gandhi. The mission is operated through two sub-missions, the Swachh Bharat Abhiyan (Gramin) and Swachh Bharat Abhiyan (Urban). Under SBA (G), financial assistance is provided under Individual Household latrines (IHHL), Rural Sanitation Mart (RSM), Solid and Liquid Waste Management (SLWM), Information Education and Communication (IEC) campaign for improved hygiene and overall environmental upgradation. The SBA (Urban), in addition to the financial assistance for household, community and public toilets, SWLM, IEC and awareness and capacity building, organised Swachh Sarvekshan 2017 to assess the performance of cities based on key thematic parameters such as sweeping, collection and transportation of Municipal solid waste, processing and disposal of solid waste, Open defecation free/toilets status, Capacity building and e-Learning, provision of public and community toilet seats and IEC and behavioral change. Though the performance of the cities of the State was not encouraging in Swachh Sarveshan, Kerala achieved Open Defecation Free status under SWA (Gramen) and nearing the declaration under SWA (urban).

Communication and Capacity Development Unit (CCDU)

The Government of India has sanctioned a CCDU specifically for sanitation sector with the objectives to develop State specific information, education and communication strategy and provide capacity development of functionaries at all levels. The unit is providing IEC/HRD support to the Suchitwa mission and providing inputs to the projects undertaken under Swachh Bharat Mission.

Recent achievements in Sanitation and Waste Management Sector

The State of Kerala is the third and the largest State declared as Open Defecation Free (ODF) under the Swachh Bharat Mission (Gramin) by constructing the remaining 174,720 toilets, especially in critical areas like remote Tribal hamlets

Table 7.5
Details of the Type of Sanitation Facilities in Kerala

No.	Name of the District	No. of GPs	IHHL Target	Kerala	Kerala	India
1	Thiruvananthapuram	73	14,211	14,211	100	73
2	Kollam	68	12,777	12,777	100	68
3	Pathanamthitta	53	10,182	10,182	100	53
4	Alappuzha	72	14,985	14,985	100	72
5	Kottayam	71	9,141	9,141	100	71
6	Idukki	52	21,081	21,081	100	52
7	Ernakulam	82	7,808	7,808	100	82
8	Thrissur	86	3,002	3,002	100	86
9	Palakkad	88	23,075	23,075	100	88
10	Malappuram	94	12,011	12,011	100	94
11	Kozhikode	70	12,799	12,799	100	70
12	Wayanad	23	13,777	13,777	100	23
13	Kannur	71	7,182	7,182	100	71
14	Kasargode	38	12,689	12,689	100	38
Total	941	174,720	174,720	100	941	3.2

Source: Suchitva Mission, 2017

Table 7.6
District-Wise Status of Sanitation and ODF in Urban Areas

No	Name of District	No. of Municipalities	IHHL Target	Progress	Completion	No. of Municipalities declared ODF
1	Thiruvananthapuram	5	6,317	16	6,301	5
2	Kollam	5	3,397	0	3,397	5
3	Pathanamthitta	4	1,673	0	1,673	4
4	Alappuzha	6	1,711	0	1,711	6
5	Kottayam	6	1,395	0	1,395	6
6	Idukki	2	445	0	445	2
7	Ernakulam	14	1,686	120	1,566	13
8	Thrissur	8	2,546	0	2,546	8
9	Palakkad	7	894	0	894	7
10	Malappuram	12	2,058	0	2,058	12
11	Kozhikode	8	2,855	0	2,855	8
12	Wayanad	3	912	0	912	3
13	Kannur	10	1,198	0	1,198	10
14	Kasargod	3	770	0	770	3
Total	93	27,857	136	27,721	92	3.2

Source: Suchitva Mission, 2017

and water-logged areas in the year 2016-17 (Table 7.5). In the urban sector, 92 urban local bodies out of 93 have become ODF by now (Table 7.6).

Developing Solid Waste Management Infrastructure

Suchitwa Mission identified and approved indigenous technologies suitable for the State for source level treatment of waste. It includes pipe composting, pot composting, bucket composting, bio-bin composting, pedestal composting, etc. in addition to vermin-composting, ring composting

and biogas plants. The mission approved 74 new service providers (in addition to 21 service providers & 2 accredited agencies) for facilitating waste management services to the LSGIs. The mission also imparted training to engineering and health staff of rural and urban local bodies on modern slaughter houses. 18 Municipalities and 8 Gram Panchayats were assisted to prepare DPRs and technical approvals for DPRs of 38 urban local bodies for source level treatment and 18 urban local bodies for common facilities were given after conducting techno legal feasibility studies. Projects for source level treatment of waste and upgradation of existing common

Table 7.7
Projects in Municipalities/Municipal Corporations

Year	Biogas plants	Community level composting devices	Renovation of existing SLWM plants	Organic Waste Converter	Material Recovery Facility	Aerobic composting units
2011-12	20767	146841	27			
2012-13	16333	140565	3			
2013-14	6313	21235				
2014-15	1991	9693	4	19		
2015-16	626	21081	1			
2016-17	2327	18519	4		17	528
Total	48559	357934	39	19	17	528

Source: Suchitwa Mission, 2017

Table 7.8
Projects in Grama Panchayats

Year	Biogas Plant	HH level composting devices	Aerobic Composting Unit	MRF
2011-12	4,601	18,403	--	--
2012-13	39,853	453,855	--	--
2013-14	7,490	71,174	--	--
2014-15	1,830	7007	--	--
2015-16	6,020	57,049	--	--
2016-17	6,456	16,724	31	4
Total	66,250	624,212	31	4

Source: Suchitwa Mission, 2017

Table 7.9
Number of Material Recovery Facilities, Plastic Shredding Units and
Aerobic Community Units in the State

No	District	MRF			Plastic Shredding Units			Thumburmuzhy Aerobins		
		Existing	Spill over 2016-17	Planned for 2017-18	Existing	Spill over 2016-17	Planned for 2017-18	Existing units	Spill over 2016-17	Planned for 2017-18
1	Thiruvananthapuram	3	23	46	1	3	15	0	12	7
2	Kollam	7	9	18	0	0	7	36	44	187
3	Pathanamthitta	2	2	7	0	0	9	7	0	9
4	Alappuzha	0	5	17	2	2	18	11	3	9
5	Kottayam	12	6	14	0	1	8	23	52	54
6	Idukki	9	7	40	2	0	18	4	5	31
7	Ernakulam	0	0	6	1	3	9	0	0	7
8	Thrissur	4	1	4	2	3	12	0	7	9
9	Palakkad	16	5	29	7	2	13	2	9	9
10	Malappuram	4	4	15	1	3	12	0	0	0
11	Kozhikode	6	3	93	5	0	34	7	0	44
12	Wayanad	0	0	6	7	0	1	0	0	1
13	Kannur	7	8	15	2	7	2	7	0	3
14	Kasargod	0	0	12	1	0	4	0	0	10
	Total	70	73	322	31	24	162	97	132	380

Number of Material Recovery Facilities, Plastic Shredding Units and Aerobic community units in the State

Source: Suchitwa Mission, 2017

facilities of urban local bodies at a cost ₹50 crore was implemented. Technical approval for establishing slaughter houses were issued to 12 municipalities and 4 Grama Panchayats and 50 per cent financial support was provided. The solid waste management projects sanctioned to urban and rural local governments are detailed in **Table 7.7, 7.8 and 7.9**.

Developing Liquid Waste Management Infrastructure

Suchitwa mission extended financial support of ₹1 crore to Kerala Water Authority for establishing Sewage Treatment Plant Elamkulam, Kochi as a co-treatment plant to handle septage/fecal sludge as well. The mission identified suitable

site in all districts with the support of district administration, for establishing standalone septage treatment facilities. A design of standalone septage treatment unit suitable for Kerala has been prepared by the mission. Construction of a sewage treatment plant was initiated at the Government Taluk Hospital, Sasthamcotta, located on the banks of Sasthamcotta lake as part of its eco-restoration plan. Suchitwa Mission also supported various municipalities for establishing waste water treatment facilities. In order to support the SLWM projects, the mission empanelled service providing agencies (**Table 7.10**).

IEC and Capacity Building

The Suchitwa Mission implemented an IEC strategy for waste management considering source

Table 7.10
Number of Service Providing Agencies

Sectors	No. of agencies
Household, Institution, Community level composting	114
Community Mobilisation	19
Guiding LSGIs to zero waste	7
Dump site Remediation/reclamation	2
Community level SWM (upto 5 TPD)	4
DPR Preparation of LWM projects	10
Implementation of LWM Projects	21
Plan preparation and implementation of Crematorium	5
Planning and implementation of Meat Processing Units	2

Source: Suchitwa Mission, 2017

Table 7.11
Training Programmes Organised During April 2016 to September 2017

No.	Participant Category	No. of Trainings	No. of Participants
1	Suchitwa Mission Officials	9	550
2	NGOs	4	175
3	Collaborative department staff	10	2,470
4	Elected representatives	4	179
5	LSGI officials	8	680
6	Volunteers	16	975
7	Resource persons	5	417
8	Scrap dealers	14	2,000
9	Masons (ODF campaign)	1	75
	Total	71	7,521

Source: Suchitwa Mission, 2017

level treatment, upgradation of existing common facilities and conscience building for avoiding disposable materials as far as possible. The mission also organised various training programmes and that organised in April 2016 to September 2017 are detailed in **Table 7.11**.

Green Protocol and Swap shops

The Mission formulated a Green Protocol for creating better sanitation behavior and reducing the use of disposables. The first public experiment of the implementation of Green Protocol was attempted in the National Games in 2015 and

subsequently attempted in various events and functions organised by government and private institutions leading to the reduction of disposables. In 2016-17, Green Protocol was observed in school arts festival which is the biggest cultural extravaganza of the State. The Attukkal Pongala, a festival entered in the Guinness Book of world records for the maximum number of women congregation (40 lakh) also successfully used Green Protocol for reducing waste generation. Subsequently, many functions organised by political parties, social institutions, religious entities etc are observing green protocol successfully.

Box 7.5 Green Protocol

It is a set of guidelines for changing individual and social attitude and behavior towards zero waste and improved hygiene. The guidelines, in general, persuade to do away with disposables, promote usage of reusables and recyclables, reduce waste, segregate waste at source, treat biodegradables at the source itself, facilitate the reuse and recycle of non-biodegradables etc. It was first attempted in the National Games held in Kerala in 2015 and later extended to various public and private functions, small and big. Now more and more institutions are adopting the protocol, especially marriages, festivals, pilgrimages etc. It maximises the use of environmental friendly materials and prevent the accumulation of disposable materials. The Government now ordered all its departments and sub-offices to observe Green Protocol strictly. The Suchitwa Mission under the banner of Haritha Keralam Mission is now building a public campaign to popularise the observance of Green Protocol all over Kerala.

The mission also converted the concept of ‘Swap-Shop’ into a reality. The swap shops aim to provide a public system for exchanging reusable goods that could be useful for others, thereby reducing the generation of waste. Setting up of swap shops were initiated by 93 municipalities, many of which are successful examples. There are 16 permanent swap shops which function on a monthly or weekly basis. There are also 62 temporary swap shops.

Financial Performance

The financial performance of the four major schemes of the mission are given in **Table 7.12**. The average input under the Suchitwa Keralam project during the last five years in rural and

urban areas are ₹2,414 lakh and ₹3,112 lakh with an average expenditure of 91 per cent and 74 per cent respectively. The average input under Swatch Bharat Abhiyan in rural areas is ₹10,299 lakh with an average expenditure of 85 per cent. The input of Swatch Bharat Abhiyan in urban areas was available only since 2015-16 and the average input and rate of expenditure are ₹3,040 lakh and 32 per cent respectively. The details of the financial performance efficiency are given in **Table 7.12**.

Management of Plastics Discards and E-waste

The disposable plastics and e-waste need special attention as the former causes severe secondary

Table 7.12
Scheme wise Financial Performance

Year	SuchitwaKeralam		Swatch Bharath Abhiyan	
	Rural	Urban	Grameen	Urban
2013-14	100	91	71	--
2014-15	88	89	90	--
2015-16	86	87	89	73
2016-17	69	75	90	18
2017-18*	91	29	85	5.4

*Up to 30.9.2017

Source: Suchitwa Mission, 2017

impacts and the latter causes dangerous pollution. At the same time these materials have very high recycle potential, if collected, segregated and processed appropriately ensuring environmental safeguards. Considering the twin advantages of managing the discards and using the wasted material as a resource, government promoted Clean Kerala Company (CKC) Limited in 2013. The company was initially entrusted with the task of collecting plastic discards and electronic wastes and their recycling. Now the company is also entrusted with the task of receiving bio-degradable discards from the Material Collection Facilities (MCF) established by the local governments and establishing and operating Resource Recovery Facilities (RRF).

CKC has collected about 108 ton of low grade plastic discards by paying ₹2 per kg of waste from the local governments and generated a revenue of ₹9.91 lakh. The recent notification of Ministry of Surface Transport, Government of India necessitate mixing of plastic discards with bitumen in the roads constructed within 50 km radius of the cities with a population of 5 lakh. In 2016-17, the State government has decided to add shredded plastics in lieu of bitumen for 10 per cent of the roads constructed by the local governments in Kerala. Accordingly, in 2016-17, 28.3 km roads have been constructed by adding about 42 ton shredded plastics in 152 local governments. In addition, 8 ton shredded plastics have been used by the State Public Works Department for roads constructed by them. The company is procuring shredded plastics from the local governments at a cost of ₹15 per kg and sold at cost of ₹20 per kg and made an income of about ₹7.7 lakh. It is estimated that there is a requirements of 1.3 ton of shredded plastic for constructing a kilometer length of road having a width of 3.75m. In 2017-18, it has been decided to enhance the collection and use of shredded plastics in the construction of roads to the tune of 35,000 ton. Accordingly, CKC is supporting the local governments to procure and install plastic shredding machines and to provide associated technical assistance. It also provides an anticipated employment potential of 10,000 in the State.

CKC has contracted M/s Earth Sense Recycle Pvt. Ltd., an agency approved by the Central Pollution Control Board, for receiving, transporting and recycling the e-waste collected and transferred by the government institutions including local governments. So far about 320 tons of e-waste has been collected and transferred for recycling by various government institutions such as Cochin University (43,835 kg), Kerala University (37,947 kg), Engineering College, Thrikkakkara (13,865 kg), Municipal Corporation, Kollam (6,048 kg), District Police Chief, Kannur (5,690 kg), Keltron, Thiruvananthapuram (6,020 kg), Hindustan News Print (3,905 kg), Civil Station, Ernakulam (10,580 kg) and 10 other such institutions. The e-waste also includes discards such as tube lights, CFL tubes and bulbs, printer cartridge etc. included in the hazardous category. The hazardous waste, generally about 20 per cent of the total e-waste collected, is transferred to the agency by paying a handling charge of ₹35 kg and other e-waste are sold to the company at a cost of ₹32 per kg.

Interventions for Pollution Control

The Kerala State Pollution Control Board (KSPCB) is the statutory authority for implementing pollution control measures. It was established in 1974 with the objective of prevention and control of water pollution in the State. Over the years, the scope increased with the enactment of new statutes aimed at protecting different aspects of the environment. The Board is now responsible for implementing the following statutes (**Table 7.13**)

The present infrastructure of the Board consist of the Head Office at Thiruvananthapuram, three Regional Offices at Thiruvananthapuram, Ernakulam and Kozhikode, 14 District Offices with laboratory facilities, a Central laboratory at Ernakulam and a Regional Laboratory at Kozhikode. Considering the magnitude of potential polluter density in Ernakulam district, there are three district offices in Ernakulam district, one looking after the Kanayannur, Kochi and Aluva

Table 7.13
Statutes Under KSPCB

SL. No.	ACT	RULES/NOTIFICATION
1	Water (Prevention and Control of Pollution) Act, 1974	Water (Prevention and Control of Pollution) Rules, 1976
2	Water (Prevention and Control of Pollution) Cess Act, 1977	Water (Prevention and Control of Pollution) Cess Rules, 1979
3	Air (Prevention and Control of Pollution) Act, 1981	Air (Prevention and Control of Pollution) Rules, 1984
4	Environment (Protection) Act, 1986	(i) Environment (Protection) Rules, 1986
		(ii) Hazardous and other Wastes (Management, and Transboundary Movement) Rules, 2016
		(iii) Manufacture, Storage and Import of Hazardous Chemical Rules, 1989
		(iv) Environment Impact Assessment Notification, 2006
		(v) Bio-Medical Waste (Management and Handling) Rules, 1998
		(vi) Plastics Waste Management Rules, 2016
		(vii) Solid Wastes (Management) Rules, 2016
		(viii) Noise Pollution (Regulation and Control) Rules, 2000
		(ix) Batteries (Management and Handling) Rules, 2001
		(x) E-Waste (Management) Rules, 2016
		(xi) Construction and Demolition Waste Management Rules, 2016

Taluks; second looking after Kothamangalam, Kunnathunad, Moovattupuzha Taluks and the third looking after the Environmental Surveillance Centre at Eloor for industries at Eloor-Edayar area and also to deal with North Paravur Taluk. The Board is also the statutory authority for planning, supervising and implementing a comprehensive programme for the prevention and control of pollution in the State of Kerala.

Implementation of Pollution Control Measures

The objective of the Board has been to bring all hospitals, industries, municipalities and other

establishments in Kerala under the consent regime, create awareness on pollution prevention and ensure environmental improvement of the State. Notwithstanding various infrastructural handicaps, it is pointed out that the Board could bring more than 15,000 industries, 4,000 hospitals and 42 municipalities and other establishments under the consent regimes.

During the last 4 years, the KSPCB was allotted ₹2430 lakh out of which 72 per cent was expended. The allocation was for operationalising the regulatory mechanism (₹300 lakh), environmental monitoring and management (₹1,430 lakh), capacity building (₹55 lakh) and infrastructure upgradation (₹635 lakh). Under regulatory

mechanism, incentives have been provided for pollution control, training has been extended to stake holders on rules/environment issues and efforts have been made to generate public awareness on the need for improved environmental upkeep. Under environment monitoring and management programme, various activities such as Periyar river water quality surveillance programme, environmental upkeep of Sabarimala, environment management of polluted sites, impact monitoring of contaminated sites, improvement of sanitation facilities in and around Veli-Akkulam lake, ambient noise mapping, preparation of environment status report, classification of water bodies in the State, preparation of water and air quality directory and maintenance of ambient air and water monitoring stations have been done. Incentives have been provided to local self-government and public health care institutions for better management of waste. Further, steps have been taken for establishing common biomedical waste treatment facilities, remediation of hazardous waste contaminated site and setting up of common Effluent Treatment Plant (ETP) at Aroor and Chandiroor. Capacity building programme for the employees have been taken up for improving the performance efficiency. Under the infrastructure upgradation programme, laboratory equipment have been procured, the laboratories of the Board have been upgraded to NABL status, dynamic website has been commissioned and automation has been improved.

The Integrated Consent to Establish (ICE) for industries/health care institutions/other establishments and Integrated Consent to Operate (ICO) for permitting the operation of such units are used as the main tools for monitoring the compliance and enforcement of pollution control rules and guidelines. This has been automated since June 15, 2014 and as on July 18, 2016, KSPCB has issued 6,744 Consent to Establish and 32,541 Consent to Operate permits. The non-complying units are issued directions for closure as per section 41 of the Water (Prevention and Control of Pollution) Act and under section 31 (A) of the Air (Prevention and Control of Pollution) Act. In

order to speed up the enforcement, the power of issuing direction for closure of non – complying industries/establishments has been delegated to the District Officer of the Board.

Haritha Keralam Mission

In 2016, government launched the Haritha Keralam Mission as an enabling entity to regain the past glory of Kerala in cleanliness, plush water and safe to eat agricultural food produces as well as to counter the challenges of climate change. This was to be achieved by making use of the linkages between water conservation, waste management, organic/natural farming and environmental security. Accordingly, the mission is functioning through three sub-missions namely water conservation, safe agricultural production and waste management. The water conservation is achieved through various micro-watershed based interventions including improved groundwater recharging initiatives, renovation and construction of traditional water bodies, desilting reservoirs, rejuvenation of streams and rivers and massive effort for water harvesting wherever feasible to ensure water security. The food security is targeted through expansion of paddy cultivation to 3 lakh Ha and promotion of vegetable cultivation wherever possible are envisaged through safe agricultural means. The waste management is proposed to be improved by adopting over-flow management options. It involves segregation of waste at sources, conversion of biodegradable waste to manure or gas at the source itself, as far as possible, establishing decentralised composting facilities for those sources having constraints and centralised option for treating overflows. The mission also involves collection of all the non-biodegradables (plastics etc.) by establishing material collection facilities and promotion of material reuse and recycling through Resource Recovery Faculties. It is also proposed to adopt centralised waste management solutions for major cities and centralised septage treatment plants in various districts.

In order to achieve the targets, the mission provides enabling support to local governments

and integrating sectoral department actions through convergence of various schemes, capacity development, technology inputs and rationalising the use of financial resources from various sources/schemes. The mission, launched on December 8, 2016, undertook field level consultations and agenda-setting workshops and formulated the plan of actions. It took initiatives to organise orientation and training so as to constitute development missions at the State, District and local government level by April 2017 through field level consultations, series of training in collaboration with Kerala Institute of Local Administration and organisational actions. Working with concerned line departments and missions such as Suchitwa mission, Mahatma Gandhi National Rural Employment Guarantee Scheme, Kudumbasree mission, Saksharatha mission etc. the mission launched various campaigns for water conservation, cleaning and improved waste management, agricultural promotion etc. It organised or supported the Jalajagratha campaign, promotion of the use of coir geo-textiles, conceptualisation and promotion of green technology centres, environmental literacy campaign, Haritholsavam campaign for schools, pre-monsoon cleaning campaign, planting of about 1 crore tree saplings on the environment day etc. The water conservation campaign resulted in the construction of about 8,000 wells and ponds and renovation/rejuvenation of about 36,500 water bodies. The mission instilled confidence and facilitated the local governments for building participatory actions to rejuvenate about 8 streams. The mission was strengthened with critical minimum man-power by July 2017 and since then there are enhanced activities at the district and local government's level based on the comprehensive guidelines on waste management and water conservation.

Freedom from Waste Campaign

In order to intensify waste management activities in the State, a special campaign was launched on August 15, 2017 after a month long preparatory activities. A series of training was undertaken at

various levels in which 3.1 lakh people were trained for carrying out a participatory study on the current waste management status in households and institutions, prepare a plan of action for each ward of local governments and declare freedom from waste. The study/survey involving about 1.54 lakh squad consisting of volunteers, resource persons, elected representative etc visited almost 56 per cent of the households as to how they are managing their waste and proposes to handle the waste that is generated at source. The study indicated that almost 77 per cent of the households are disposing the biodegradable waste at the source itself and 45 per cent are adopting composting practices by some means. It is estimated that 32 per cent of the households are adopting improved composting practices. 39 per cent of households reported that they are littering, 27 per cent of the households are disposing the grey waste water to soak pits and the rest are disposing it to the open either in their premises or to public drains. Vacuum pumps and trucks empty 7 per cent of the septage/fecal sludge from septic-tanks/leach-pits, most of which ultimately reaches the water bodies. And 49 per cent of the households are willing to pay for obtaining improved waste management services. Based on the status report of each local governments, projects clinics and consultations were held based on which the local governments reviewed their plan of actions, if any, in the sanitation and waste management sector. About 300 local governments have revised their projects or evolved new projects and planned to launch it on the November 1, 2017 as targeted. These projects addresses components of comprehensive waste management components such as segregation of waste at source, Haritha Karma Sena for facilitating non-biodegradable waste collection from source and biodegradable waste for those locations having constraints, establishing material collection facility and resource recovery centres for non-biodegradable waste management, installing household, institutional and decentralised facility for treating biodegradable waste, borrowing help and assistance from Haritha Sahaya Sthapanam as well as Clean Kerala Company. The projects that are initiated will be brought to fully operational

by January 1, 2018 and by March 31, 2018, waste management activities will be initiated in all the local governments.

Lessons Learnt

Considering the fragile environmental systems of Kerala, the carrying capacity of the State is limited to restrained livelihood and non-aggressive developmental interventions. It implies that improvement in the quality of life of the State is possible only when the pattern and levels of production-consumption activities are compatible with the capacities of natural environment to assimilate the impacts. Therefore, the growth potential of Kerala sustains only with improved natural resource enrichment and reduced pollution load. It necessitates the caring of environmental security by addressing the issues of land, water and biota as well as waste management and mitigation of pollution. The efforts of the government for enabling environment-linked actions by local governments and development departments supported by mission mode initiatives are expected to bring about a green development pattern for the State that can regain water security, lush green agricultural tracts, carbon neutrality and environmental security. The overflow waste management system is found to provide the most appropriate strategy for solid and liquid waste management in Kerala wherein the priority is for decentralisation and centralisation is subjected to the characteristics of waste.

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GLOSSARY

Basic Price

Basic price, the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any tax payable, and plus any subsidy receivable, by the producer as a consequence of its production or sale. It excludes any transport charges invoiced separately by the producer.

Comprehensive Health Insurance Scheme (CHIS)

It extends to all families other than the BPL families (absolute poor) as per the Guidelines of Planning Commission who come under the RSBY.

Consumer Price Index (CPI)

Consumer Price Index (CPI) is designed to measure the changes overtime in the level of retail prices of a fixed set of goods and services (consumption basket) consumed by an average family of a defined population group at a particular place. The index number of industrial and agricultural workers is referred.

CDS

Current Daily Status. In the employment and unemployment survey, there are four concepts - CDS, CWS, UPS and UPSS - used to measure the activity status like employed or unemployed or outside labour force of those covered by the survey. In the CDS approach the activity status is determined for each day of the reference week (i.e 7 days preceding the date of survey). A person who worked at least for one hour but less than four hours was considered having worked for half a day. If worked for four hours or more during a day, he was considered as employed for the whole day.

CWS

Current Weekly Status: Here the activity status is determined with reference to a period of seven days preceding the date of survey. A person who reports having worked at least for one hour on any day during the reference period of one week while

pursuing a gainful occupation was deemed to be employed. A person who did not work even for one hour during the reference period of one week but was seeking or available for work was deemed to be unemployed.

Deen Dayal Upadhyay Gram Jyoti Yojana (DDUGJY)

This is a new program launched by Ministry of Power for improving the distribution infrastructure of rural areas and for ensuring 24x7 power supply to all rural households.

Density of Population

Density of population is one of the important indices of population concentrations. It is defined as the number of persons per sq. kilometer. The geographical unit is ward, town, district and state

E- procurement

It is the business to business purchasing of goods and services through the internet.

Gross National Income (GNI)

It is GDP less net taxes on production and imports, less compensation of employees less property income payable to the rest of the world plus the corresponding items receivable from the rest of the world (in other words, GDP less primary incomes payable to non-resident units plus primary incomes receivable from non-resident units); an alternative approach to measuring GNI at market prices is as the aggregate value of the balances of gross primary incomes for all sectors; (note that gross national income is identical to gross national product (GNP) as previously used in national accounts generally).

Gross National Product (GNP)

Gross National Product is the total market value of all final goods and services produced in a year. GNP includes net factor income from abroad whereas GDP does not.

Gross Value Added (GVA)

GVA is the measure of the value of goods and services produced in an area, industry or sector of an economy, in economics. In national accounts GVA is output minus intermediate consumption; it is a balancing item of the national accounts' production account.

GVA at Basic prices

Gross value added at basic prices is defined as output valued at basic prices less intermediate consumption valued at purchasers' prices. Here the GVA is known by the price with which the output is valued. From the point of view of the producer, purchasers' prices for inputs and basic prices for outputs represent the prices actually paid and received. Their use leads to a measure of gross value added that is particularly relevant for the producer.

Infant Mortality

Death of a baby before his or her first birthday is called infant mortality. The infant mortality rate is an estimate of the number of infant deaths for every 1,000 live births.

Janasree Bima Yojana (JBY)

Exclusively for the Spouses of SHG members who are not covered under AABY and who are under the age group 18 to 58 years.

JJ Act 2000

The Juvenile Justice (Care and Protection of Children) Act, 2000 is the primary legal framework for juvenile justice in India. The Act provides for a special approach towards the prevention and treatment of juvenile delinquency and provides a framework for the protection, treatment and rehabilitation of children in the purview of the juvenile justice system.

Labour Force Participation Rate (LFPR)

Labour force participation rate is the ratio between the labour force and the overall size of their cohort (national population of the same age range).

Literacy Rate

Literacy rate is defined as the percentage of population aged 6 years and over who can both read and write with understanding a short simple statement on his/her everyday life.

National Family Health Survey

The National Family Health Survey (NFHS) is a large-scale, multi-round survey conducted in a representative sample of households throughout India.

Net National Product (NNP)

Net National Product at factor cost or National Income is the sum of wages, rent, interest and profits paid to factors for their contribution to the production of goods and services in a year.

Old age dependency ratio

The no. of persons in age group 60 years and more ÷ No. of persons in age group 15-59 years.

Parity Index

Parity Index is a relative measure as to the gains or loss to farmers as a consequence of the price fluctuations in the economy. The index is a function of cost of farm cultivation, domestic expenditure and market rate of farm products.

Persons with Disability Act 1995

The Act has been enacted under Article 253 of the Constitution read with item No. 13 of the Union List (WORD - -1) It effect to the proclamation on the full participation and equality of the persons with disabilities in the Asian & Pacific Region and provides for their education, employment, creation of barrier free environment, social security, etc.

Preraks

Preraks are the authoritative of the continuing education centres for giving leadership to the informal education and local development activities.

Proxy Indicator

Indirect measure or sign that approximates or represents a phenomenon in the absence of a direct measure or sign. Number of female members of a chamber of commerce, for example, is a proxy indicator of the percentage of female business owners or executives.

Protection of Children from Sexual Offences Act, 2012

An Act to protect children from offences of sexual assault, sexual harassment and pornography and provide for establishment of Special Courts for trial of such offences and for matters connected therewith or incidental thereto.

Rashtriya Swasthya Bima Yojana (RSBY)

It is a Health Insurance Scheme launched by Union Government for BPL workers as defined by the Planning Commission and their families in the unorganized sector.

Retail Price

Retail Price of a commodity is defined as the price which the ultimate consumer pays for relatively small transactions of the commodity.

School Management Committees (SMC)

It comprises of local officials, parents, guardians and teachers. The SMCs will monitor utilization of govt grants and the school environment.

Sex Ratio

The Sex ratio is one of the basic demographic characteristics of the population. It is defined as the number of females per 1000 males. The sex ratio of the population is affected by the differentials in the mortality conditions of males and females, sex selective migration and the sex ratio at birth.

UDAY (Ujwal DISCOM Assurance Yojana)

UDAY aims at the financial turnaround and operational revival of debt ridden Power Distribution Companies (DISCOMs) and ensures a sustainable permanent solution to the problem

UPS

Usual Principal Status: Here the activity status is determined with reference to a relatively longer period during a reference period of 365 days. Unemployment Rate as per this method indicates the numerical magnitude of the persons unemployed for a relatively longer period. Thus it is an indicator of chronically unemployed.

UPSS

Usual Principal and Subsidiary Status: Unemployment Rate as per this method also indicates the numerical magnitude of the persons unemployed for a relatively longer period during a reference period of 365 days. However, here the number of unemployed is arrived at excluding those employed in a subsidiary capacity during the reference period. The number arrived as per this method will be lower than the UPS approach as some persons categorized as unemployed according to the UPS approach might be working in a subsidiary capacity and this persons are excluded in the UPSS method.

Wholesale Price Index (WPI)

Wholesale Price Index measures the average change overtime in the wholesale prices of 17 important agricultural commodities produced and transacted in the state (Kerala) with the agricultural year 1952-53 as the base. These indices are computed every month. Weights are assigned to the commodities in proportion to the value of production to make the index fully representative.

ABBREVIATIONS

AABY: <i>Aam Admi Bima Yojana</i>	CCDU: <i>Communication and Capacity Development Unit</i>
AAAY: <i>Anthyodaya Anna Yojana</i>	CDC: <i>Child Development Centre</i>
AEU: <i>Agro Ecology Unit</i>	C-DIT: <i>Centre for Development of Imaging Technology</i>
AIBP: <i>Accelerated Irrigation Benefit Programme</i>	CDS: <i>Centre for Development Studies</i>
AMRUT: <i>Atal Mission for Rejuvenation and Urban Transformation</i>	CEPCI: <i>Cashew Export Promotion Council of India</i>
ANERT: <i>Agency for Non-conventional Energy and Rural Technology</i>	CERT: <i>Computer Emergency Response Team</i>
ANP: <i>Annapoorna Scheme</i>	CFPI: <i>Consumer Food Price Index</i>
APL: <i>Above Poverty Line</i>	CFPI: <i>Consumer Food Price Index</i>
APTS: <i>Anti Power Theft Squad</i>	CFSC: <i>Common Facility Service Centre</i>
ASAP: <i>Additional Skill Acquisition Programme</i>	CHIAK: <i>Comprehensive Health Insurance Agency</i>
ASCs: <i>Agro Service Centres</i>	CHIS: <i>Comprehensive Health Insurance Scheme</i>
ASEP: <i>Additional Skill Enhancement Programme</i>	CHIS: <i>Comprehensive Health Insurance Scheme</i>
ATMA: <i>Agriculture Technology Management Agency</i>	CIAL: <i>Cochin International Airport Limited</i>
AVTS: <i>Advanced Vocational Training System</i>	CMRI: <i>Critical Mineral Research Institute</i>
AYUSH: <i>Ayurveda, Yoga and Naturopathy, Siddha, Unani and Homoeopathy</i>	Coirfed: <i>The Kerala State Co-operative Coir Marketing Federation Ltd.</i>
BDA: <i>Bamboo Development Agency</i>	CPC: <i>Centralized Processing Center</i>
BE: <i>Budget Estimate</i>	CPI: <i>Consumer Price Index</i>
BMC: <i>Biodiversity Management Committees</i>	CPIS: <i>Coconut Palm Insurance Scheme</i>
BPL: <i>Below Poverty Line</i>	CPSEs: <i>Central Public Sector Enterprises</i>
BRDC: <i>Bekal Resorts Development Corporation</i>	CRDP: <i>Capital Regional Development Project</i>
BSNL: <i>Bharat Sanchar Nigam Limited</i>	CSIND: <i>Coastal Shipping and Inland Navigation Department</i>
BSUP: <i>Basic Services to the Urban Poor</i>	CSO: <i>Central Statistical Organisation</i>
CAPEX: <i>Kerala State Cashew Workers Apex Co-Operative Society</i>	CSS: <i>Centrally Sponsored Scheme</i>
CBSE: <i>Central Board of Secondary Education</i>	CTCRI: <i>Tuber Crops Research Institute</i>
	CUSAT: <i>Cochin University of Science and Technology</i>
	CWRDM: <i>Centre for Water Resources Development and</i>

*Manangement***DAME:** Directorate of Ayurveda Medical Education**DBFOT:** Design, Built, Finance, Operate and Transfer**DCB:** District Co-operative Bank**DDU GKY:** Deen Dayal Upadhyaya Grameen Kaushalya Yojana**DES:** Directorate of Economics and Statistics**DGE&T:** Director General of Employment and Training**DIC:** Directorate of Industries and Commerce**DMRC:** Delhi Metro Rail Corporation**DRDO:** Defence Research and Development Organisation**DRIQ Board:** Design Research, Investigation and Quality Control Board**EDCs:** Eco Development Committees**EMC:** Energy Management Centre**ENVIS:** Environmental Information System:**EPC:** Engineering Procurement and Construction**ESI:** Employees' State Insurance**ESS:** Entrepreneur Support Scheme**FAO:** Food and Agriculture Organization**FCI:** Food Corporation of India**FMCG :** Fast Moving Consumer Goods**FMD :** Foot and Mouth Disease**FOMIL:** Foam Mattings India Limited**FSI :** Forest Survey of India**GATE:** Graduate Aptitude Test in Engineering**GCDA:** Greater Cochin Development Authority**GCF:** Green Climate Fund**GEC:** Government Engineering College**GHG :** Green House Gas**GOI:** Government of India**GST:** Goods And Service Tax**GSVA:** Gross State Value Added**GVA :** Gross Value Added**HDCK:** Handicrafts Development Corporation of Kerala**HDI :** Human Development Index**HS:** High School**HSC:** House Service Connection**HUDCO:** Housing and Urban Development Corporation**HVDC:** High Voltage Direct Current**IAY :** Indira Avas Yojana**ICDS:** Integrated Child Development Services**ICFOSS:** International Centre for Free And Open Source Software**ICPS:** Integrated Child Protection Scheme**ICSE:** Indian Certificate of Secondary Education**ICT:** Information and Communications Technology**IGC:** Industrial Growth Centers**IGNOAPS:** Indira Gandbi National Rural Employment Guarantee Scheme**IHSDP:** Integrated Housing and Slum Development Programme**IIHT:** Indian Institute of Handloom Technology**IIITM-K :** Indian Institute of Information Technology and Management Kerala**IIT:** Indian Institute of Technology**IKI:** International Climate Initiative**ILO:** International Labour Organisation**INDC :** India's intended Nationally Determined Contribution**IPC:** Irrigation Potential Created**IPDS:** Integrated Power Development Scheme**ISM:** Interstate Migrant, Indian System of Medicine**ISRO:** Indian Space Research Organisation**IT:** Information Technology**ITI:** Industrial Training Institutes**IUCN:** International Union for Conservation of Nature**IWMP :** Integrated Watershed Management Programme**JJ:** Juvenile Justice**JLGs:** Joint Liability Groups**JNNURM:** Jawaharlal Nehru National Urban Renewal Mission**JNPT:** Jawaharlal Nehru Port Trust**JNTBGRI:** Jawaharlal Nehru Tropical Botanic Garden and Research Institute**KADCO:** Kerala Artisans Development Corporation**KASE:** Kerala Academy for Skills Excellence**KAU:** Kerala Agricultural University**KCC :** Kissan Credit Card**KCHR:** Kerala Council for Historical Research**KCMMF:** Kerala Co-operative Milk Marketing Federation**Kerafed:** Kerala State Kera Karshaka Sahakarana Federation**KESRU:** Kerala Self Employment Scheme for the Registered Unemployed

KFC: Kerala Financial Corporation	KSSM: Kerala Social Security Mission
KFRI: Kerala Forest Research Institute	KSUDP: Kerala Sustainable Urban Development Project
KFWFB : Kerala Fisherman's Welfare Fund Board	KSUM: Kerala Startup Mission
KHRI: Kerala Highway Research Institute	KSWAN: Kerala State Wide Area Network
KIIFB: Kerala Infrastructure Investment Fund Board	KTDC: Kerala Tourism Development Corporation
KILA: Kerala Institute of Local Administration	KTIL: Kerala Tourism Infrastructure Limited
KILE: Kerala Institute of Labour and Employment	LED: Light Emission Diode
KINFRA: Kerala Industrial Infrastructure Development Corporation	LFPR: Labour Force Participation Rate
KITTS: Kerala Institute of Tourism and Travel Studies	LIFE: Livelihood, Inclusion and Financial Empowerment
KLDB : Kerala Livestock Development Board	LPG: Liquefied Petroleum Gas
KRDCL: Kerala Rail Development Corporation	LSGs: Local Self Governments
KRFB: Kerala Road Fund Board	LTRCF: Long Term Rural Credit Fund
KSACC: Kerala State Agency for the Expansion of Cashew Cultivation	MAH: Major Accident Hazard
KSBB: Kerala State Biodiversity Board	MBGIPS: Malabar Botanical Garden and Institute of Plant Sciences
KSBCDC: Kerala State Backward Classes Development Corporation	ME: Micro Enterprise
KSBM: Kerala State Bamboo Mission	MEP: Minimum Export Price
KSCADC: Kerala state coastal Area Development Corporation	MES: Modular Employable Skill Courses
KSCARDB: Kerala State Co-operative Agriculture and Rural Development Bank	MGNREGS: Mahatma Gandhi National Rural Employment Guarantee Scheme
KSCC: Kerala State Coir Corporation	MIDH: Mission for Integrated Development of Horticulture
KSCDC: Kerala State Cashew Development Corporation	MoFPI: Ministry of Food Processing Industries
KSCMMC: Kerala State Coir Machinery Manufacturing Company Ltd	MSME: Micro, Small and Medium Enterprises
KSCSTE: Kerala State Council for Science, Technology and Environment	MT: Metric Tonne
KSDI: Kerala State Spatial Data Infrastructure	MVIP: Muvattupuzha Valley Irrigation Project
KSEBL: Kerala State Electricity Board Limited	NABARD : National Bank for Agriculture and Rural Development
KSERC: Kerala State Electricity Regulatory Commission	NAFCC: National Adaptation Fund on Climate Change
KSIDC: Kerala State Industrial Development Corporation	NATPAC: National Transportation Planning And Research Centre
KSINC: Kerala Shipping and Inland Navigation Corporation Limited	NCRMI: The National Coir Research and Management Institute
KSITII: Kerala State Information Technology Infrastructure Ltd	NCVT: National Council for Vocational Training
KSITM: Kerala State Information Technology Mission	NFHS: National Family Health Survey
KSoM: Kerala School of Mathematics	NFSA: National Food Security Act
KSPCB: Kerala State Pollution Control Board	NGOs: Non-government Organizations
KSRRDA : Kerala State Rural Roads Development Agency	NHAI: National Highways Authority of India
KSRTC: Kerala State Road Transport Corporation	NIC: National Informatics Centre
	NKKP: Nava Keralam Karma Padhathi
	NNI: Net National Income
	NORKA: Non Resident Keralite Affairs
	NRDWP: National Rural Drinking Water Programme

- NRI**s: *Non Resident Indians*
- NRK**s: *Non Resident Keralites*
- NRLM** : *National Rural Livelihood Mission*
- NSSO**: *National Sample Survey Office*
- NTFP** : *Non-Timber Forest Product*
- NUALS**: *National University of Advanced Legal Studies*
- NULM**: *National Urban Livelihood Mission*
- ORC**: *Our Responsibility to Children Kerala*
- PACS**: *Primary Agricultural Co-operative Societies*
- PDS**: *Public Distribution System*
- PF** : *Protected Forests*
- PGS**: *Participatory Guarantee System*
- PMAY** : *Pradhan Mantri Awaas Yojana*
- PMAYG**: *Pradhan Mantri Awaas Yojana Gramin*
- PMAY-U**: *Pradhan Mantri Awas Yojana – Urban*
- PMEGP**: *Prime Ministers Employment Generation Programme*
- PMEGP**: *The Prime Minister's Employment Generation Programme*
- PMGSY** : *Pradhan Mantri Gram Sadak Yojana*
- PMKSY**: *Pradhan Mantri Krishi Sinchai Yojana*
- PMSSY**: *Pradhan Mantri Swasthya Suraksha Yojana*
- POCSO Act**: *Protection of Children from Sexual Offences Act*
- POL**: *Petroleum, Oil and Lubricants*
- PPA**: *Power Purchase Agreement*
- PPP**: *Public Private Partnership*
- PSU**: *Public Sector Undertakings*
- PTA**: *Parent Teachers Association*
- PWD**: *Public Works Department*
- PwDs**: *Persons with Disabilities*
- RAY**: *Rajiv Awaas Yojna*
- RBDCK**: *Roads and Bridges Development Corporation of Kerala*
- RCC**: *Regional Cancer Centre*
- REACH**: *Resource Enhancement Academy for Career Heights*
- RET**: *Rare, Endangered and Threatened plants*
- RGSA**: *Rastriya Gram Swaraj Abhiyan*
- RIAB**: *Restructuring and Internal Audit Board*
- RICK**: *Road Infrastructure Company Kerala*
- RIDF**: *Rural Infrastructure Development Fund*
- RIT**: *Rajiv Gandhi Institute of Technology*
- RKVY** : *Rashtriya Krishi Vikas Yojana*
- RRB** : *Regional Rural Bank*
- RSBY**: *Rashtriya Swasthya Beema Yojana*
- RSPM**: *Respirable Suspended Particulate Matter*
- RTE**: *Right to Education*
- RWBCIS**: *Restructured Weather Based Crop Insurance Scheme*
- SAF**: *Society for Assistance to Fishermwomen*
- SAPCC**: *State Action Plan on Climate Change*
- SAZ**: *Special Agricultural Zones*
- SBM**: *Swachh Bharat Mission*
- SC/ST**: *Scheduled Caste/ Scheduled Tribes*
- SCCF**: *Special Climate Change Fund*
- SCM**: *Smart Cities Mission*
- SDG**: *Sustainable Development Goals*
- SECC**: *Socio Economic and Caste Census*
- SECWAN**: *Secretariat Wide Area Network*
- SHGs**: *Self Help Groups*
- SHM**: *State Horticulture Mission*
- SID**: *State Initiatives on Disabilities*
- SIHM**: *State Institute of Hospitality Management*
- SI-MET**: *State Institute of Medical Education and Technology*
- SJD**: *Social Justice Department*
- SLBC** : *State Level Bankers Committee*
- SLBC**: *State level Banker's committee*
- SLBP** : *Special Livestock Breeding Programme*
- SONTR**: *State's Own Non Tax Revenue*
- SOTR**: *State's Own Tax Revenue*
- SPB**: *State Planning Board*
- SRIBS**: *Srinivasa Ramanujan Institute for Basic Sciences*
- SSLC**: *Secondary School Leaving Certificate*
- SUIIT**: *Skill Updating Institute for Staff Training*
- Supplyco**: *Kerala State Civil Supplies Corporation*
- SWTD**: *State Water Transport Department*
- TBI**: *Technology Business Incubators*
- TDAP**: *Technology Development and Adaptation Programme*
- TISS**: *Tata Institute of Social Sciences*
- TREQIP**: *Technical Education Quality Improvement Programme*
- TREST**: *Trivandrum Engineering Science and Technology*

TRIDA: *Thiruvananthapuram Development Authority*
TTI: *Teacher Training Institute*
UAM: *Udyog Aadhar Memorandum*
UNESCO: *United Nations Educational, Scientific and Cultural Organization*
UNICEF: *United Nations International Children's Emergency Fund*
UNWTO: *United Nations World Tourism Organisation*
UPS: *Upper Primary School*
UPSS: *Usual Principal Subsidiary Status*
UR: *Unemployment Rate*
UT: *Union Territory*
VAMBAY: *Valmiki Ambedkar Awas Yojana*
VAT: *Value Added Tax*
VFPCK: *Vegetable and Fruit Promotion Council Kerala*
VGf: *Viability Gap Fund*
VHSE: *Vocational Higher Secondary Education*
WPI: *Wholesale Price Index*
WPR: *Worker Population Ratio*
WWDR: *World Water Development Report*