ANIMAL HUSBANDRY,FISHERIES AND FORESTRY

CHAPTER V

Animal husbandry, dairying and fisheries activities play a key role in promoting the socio-economic development of rural folk. These value adding activities have significantly contributed to the food basket, nutritional security, and household income of the rural folk and generated gainful employment particularly among the landless, small and marginal farmers and women. These sectors have excellent forward and backward linkages which promote many industries and subsidiary activities.

During the 11thPlan period (2007-12), the animal husbandry sub-sector contributed about 2.5 percent of Gross State Domestic Product (GSDP) and accounted for 24.8 percent of agricultural and allied activities. During this Plan period, the average production level of milk stood at 67.55 lakh tonnes and eggs at 10,284 millions exceeded their respective targets – 57.08 lakh tonnes and 9,787 millions, with the result, the percapita availability of eggs per annum increased from 127 in 2007-08 to 164 in 2011-12. During 12thPlan (2012-17), it is programmed to produce 77.65 lakh tonnes of milk, 19,718 million of eggs and 5.83 lakh tonnes of meat in the State. The sub-sectoral contribution of fisheries in terms of GSDP registered an average growth rate of 2.6 percent during the 11thPlan period and its contribution to the primary sector formed 7 percent. During the 12thPlan, the cumulative target is 21.74 lakh tonnes for marine and 9.17 lakh tonnes for inland fish catches. The contribution of forestry and logging witnessed an annual average growth of 1.9 percent during the 11thPlan period. It's contribution to the primary sector was 5.5 percent and to total GSDP of the State was 0.5 percent.

5.1. Animal Husbandry:

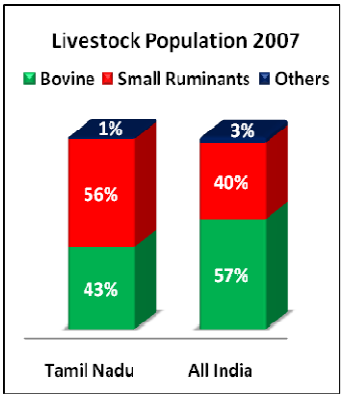
5.1.1 Livestock Population:

The State's total livestock population as per 18thQuinquennial Livestock Census (2007) was 30.8 million. As compared to the previous Census, it was higher by 23.7 percent. Except others (horses & ponies, donkeys and pigs), all other components of livestock witnessed an increase between these two Censuses. The relative share of bovine, small ruminants and others in the State's total livestock was by and large static in the ratio of 43:56:1.Tamil Nadu accounted for 5.6 percent of country's cattle population, 1.9 percent of buffaloes, 11.2 percent of sheep and 6.6 percent of goats. The share of State's livestock population at all India worked out to 5.8 percent. The prominent cattle rearing districts in the State are Thoothukudi (8.6%), Villuppuram(7.7%), Thiruvannamalai (6.4%),Pudukkottai (6.1%), Kancheepuram (5.6%), Vellore (5.1%), Salem (5.0%), Erode (4.9%), Tirunelveli (4.5%), Dharmapuri (4.0%) and Thanjavur (4.0%). These districts put together accounted for about 62 percent of the State's total livestock population.

Table-5.1 Livestock Censuses (million)

Category	2004	2007
Cattle	9.1	11.2
Buffaloes	1.6	2.0
Sheep	5.6	8.0
Goats	8.2	9.3
Others	0.4	0.3
Total	24.9	30.8

Source: Department of Animal Husbandry and Veterinary Services, Chennai-6.



The State's total breedable bovine population as per 2007 Census stood at 5.71 millions. It's share in total bovine population was 43.2 percent. Of the total breedable population, the share of cattle and buffalo was in the ratio of 84:16. In the case of cattle, the share of breedable population was 42.9 percent and for buffaloes 45.0 percent. Exotic and cross breed put together accounted for 70 percent of the breedable cattle, whereas non-descript varieties with a share of 62 percent among buffaloes were predominant. The State's relative share in total breedable cattle population was 7 percent and in buffaloes 2 percent at all India. The proportion of milch animals to breedable population was around 90 percent both in the cases of cattle and buffaloes.

The State's breeding policy for cattle and buffaloes aims to cross breed non-descript cattle with Holstein Friesian and Jersey cattle and upgrade the indigenous buffaloes with Murrah graded through cross breeding. Artificial insemination with liquid semen of exotic and graded breeds was introduced in 1948. With the introduction of frozen semen, the liquid semen was gradually replaced and all artificial insemination centres started using frozen semen since 1993. To cater to the needs of the State, there are three frozen semen production stations and 20 frozen semen banks functioning. Apart from this, the total number of artificial insemination centres functioning in the State was 3,429 during 2012-13. There was a steady increase in the administration of artificial insemination in the State over a period of time. It increased from 44.44 lakh in 2011-12 to 46.95 lakh in 2012-13 (5.6%). It would be in the order of 47.40 lakh in 2013-14. The calving rate remained unchanged at around 42 percent. The State's concerted efforts have paid rich dividends in the form of increase in the number of exotic and cross breeds in breedable cattle population from 25.89 lakh in 2004 to 33.77 lakh in 2007 (30.4%). In the case of buffaloes, the number of Murrah graded breedable buffaloes was static at 9.0 lakh in both these years.

5.1.2. Dairy Development:

Dairying, an important source of income for millions of rural families, plays an important role in providing gainful employment and income generating opportunities. To keep pace with the growing population and changing consumption pattern caused by increasing percapita income, there is a need to improve milk production and availability in the State. The State Government is taking concerted efforts to increase the productivity of milch animals and increase the per capita availability of milk to meet the growing requirements. The concerted efforts of the State's breeding policy and various healthcare measures have resulted in an increase in the number of cross breed breedable bovine population and helped to improve milk production in the State. There has been a steady increase in the total milk production in the State. The milk production in the State reached an all-time high of 70.05 lakh tonnes in 2012-13. At this level, it exhibited an increase of 0.5 percent over the previous year's level of 69.68 lakh tonnes. In 2013-14, it was targeted to produce 71.97 lakh tonnes of milk. Of the total milk production in the State, the contribution of cows and buffaloes was in the ratio of 90:10. The State's share in total milk production at the all India level stood at 5.3 percent.

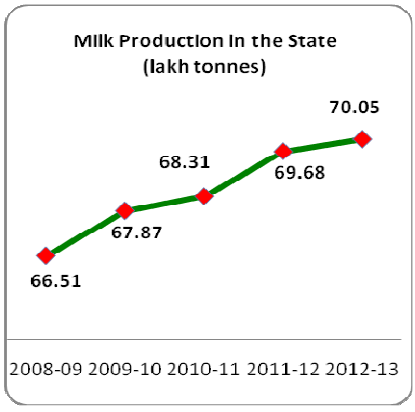


Table- 5.2 Milk Production and Per-capita Availability

Year	Milk Production (lakh tonnes)	Percapita per day availability (grams)
2011-12	69.68	265
2012-13	70.05	260
2013-14*	71.97	261

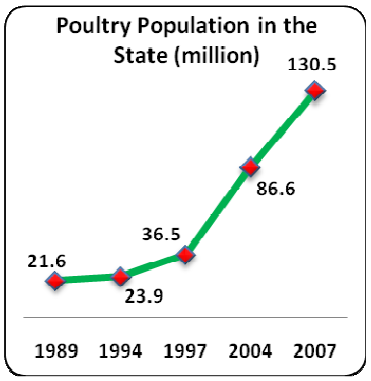
Note: * Anticipated.
Source: Department of Animal Husbandry and Veterinary Services, Chennai-6.

The average milk yield per animal per day in the State rose from 2.58 kgs in 2011-12 to 2.72 kgs in 2012-13 (5.4%) in the case of indigenous cows, from 6.41 kgs to 6.81 kgs (6.2%) in respect of exotic and cross breeds and from 4.09 kgs to 4.40 kgs (7.6%) for buffaloes. At the all India level, the estimated average milk yield per animal per day was 2.27 kgs for indigenous, 6.97 kgs for cross breed and 4.71 kgs for buffaloes as of 2011-12. As against the requirement of 250 grams per day, the average percapita per day milk availability in the State by and large remained unchanged at 260 grams in 2012-13 and 2013-14.

With a view to procure, process and market the milk in a cost effective manner and to ensure remunerative price to milk producers and affordable price to consumers besides providing technical input services, Dairy Development Programmes are being implemented in the State through a well-designed network of milk co-operatives patterned on the Anand Model of Gujarat State. Milk and milk products are marketed by Tamil Nadu Co-operative Milk Producers' Federation Limited with the brand name of 'Aavin'. It is the apex body of the District Co-operative Milk Producers' Union in the State. The number of Primary Co-operative Milk Producers' Societies established went up from 9,231 in 2011-12 to 11,397 in 2012-13 (23.5%). Apart from these societies, 1,722 Milk Producers' Women Co-operative Societies are also functioning in the State. The total number of farmers brought under the ambit of these societies improved from 22.26 lakh in 2011-12 to 22.86 lakh in 2012-13 (2.7%). At the union level, there are 35 milk processing centres functioning in the State with a total capacity of 33.74 lakh litres per day. The procurement of milk from these societies gradually expanded from 20.67 lakh litres per day in 2010-11 to 21.40 lakh litres per day in 2011-12 (3.5%) and further to 24.36 lakh litres per day in 2012-13 (13.8%).The quantum of milk sold by the Federation in the State was stepped up from 19.58 lakh litres per day in 2011-12 to 21.15 lakh litres per day in 2012-13 (8%). In 2013-14, it was programmed to hike the sale of milk to 23 lakh litres per day.

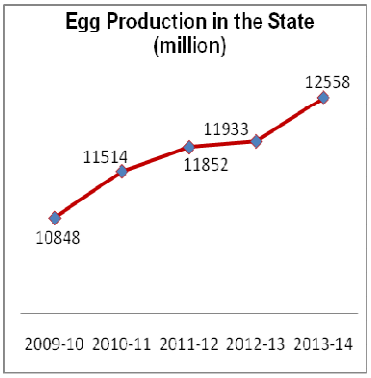
The sale price per litre of toned milk at Rs. 26.50/-, standardized milk Rs. 31/- and full cream milk Rs.35/- remain unchanged in both the years. In 2013-14, the State hiked the per litre procurement price of cow milk from Rs.20/- to Rs.23/- and that of buffaloes from Rs.28/- to Rs.31/- without enhancing the retail sale price of milk to consumers. This hike would benefit 22.5 lakh milk producers coming under the fold of the dairy sector with effect from 1st January 2014. The total sale value of milk and milk products both at the federation and union levels bulged from Rs.2,269 crore in 2010-11 to Rs.2,791 crore in 2011-12 (23.0%) and further to Rs. 3,584 crore in 2012-13 (28.4%). In support to the Government efforts, there are 42 private dairies with having handling capacity of 62.68 lakh litres per day are functioning in the State.

5.1.3. Poultry Development:



Poultry sector provides direct and indirect employment to the ultra-poor in the State. To improve the supplementary income of people in rural areas, additional avocations like cattle and poultry rearing are being encouraged. Total poultry population in the State increased from 86.6 million in 2004 to 130.5 million in 2007, witnessing a growth of 50.7 percent. The State's relative share at the all India level was 19.7 percent and Tamil Nadu stood first in poultry rearing. The poultry population comprised 29.3 million back yard poultry (22%) and 101.2 million commercial poultry (78%). Of the total poultry population in the State, improved variety alone accounted for as high as 78 percent and the remaining being Desi varieties.

Namakkal (32%) and Coimbatore (34%) are the hub of poultry rearing districts which accounted for about 66 percent of the State's total poultry population.



There was a steady step up in the egg production in the State. With a total egg production of 11,933 million in 2012-13, the State scaled a new peak. At this level, it was higher than the previous year's level of 11,852 million by 0.7 percent. In 2013-14, it was programmed to produce 12,558 million of eggs. Of the total egg production in the State, the contribution of improved variety was significant at 96 percent and the remaining production was of desi variety. On an average, 1,080 million eggs per annum are being exported to other countries. The State's relative share at the all India was 18 percent and stood in second place next only to Andhra Pradesh. Among the districts, Namakkal alone contributed a large chunk of 77 percent of the total egg production in the State. The annual requirement of eggs per person worked out to 180. The percapita availability of eggs in the State at 162 in 2012-13 fell short of the requirement by 18 percent. At the all India level, the percapita availability was estimated at 55 (2011-12). Among the States, the percapita availability of eggs in Tamil Nadu occupied the second place, the first being Andhra Pradesh (238). With a view to protect the flock from heavy mortality resulting from Ranikhet disease, 241.40 lakh vaccinations were performed during 2012-2013.

Table- 5.3 Egg Production and Per-capita Availability

Year	Egg Production (millions)	Percapita per year Availability (No's)
2011-12	11,852	163
2012-13	11,933	162
2013-14*	12,558	165

Note: * Anticipated.
Source: Department of Animal Husbandry and Veterinary Services, Chennai-6.

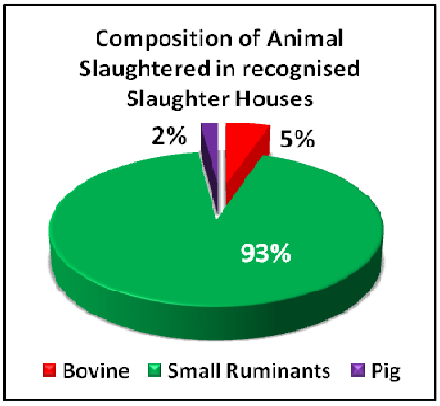
5.1.4. Meat Production:

In order to supply good quality and hygienic meat to consumers, registered slaughter houses are being setup in the State. Although the number of registered slaughter houses in the State declined from 113 in 2011-12 to 110 in 2012-13, the total number of animals slaughtered in registered slaughter houses climbed up from 60.84 lakh in 2011-12 to 70.32 lakh in 2012-13 (15.6%). In 2013-14, it would further go up to 81.3 lakh. Of the total animals, slaughtered small ruminants alone account for 93 percent. The total meat production (excluding poultry) in the State increased from 1,106 lakh kgs in 2011-12 to 1,279 lakh kgs in 2012-13. The anticipated production in 2013-14 was of the order of 1,480 lakh kgs. The State's share in total meat production at the all India stood at 2.3 percent (2010-11).

Table- 5.4 Meat Production in Registered Slaughter Houses in Tamil Nadu (lakh kgs)

Category	2011-12	2012-13	2013-14*
Beef	268.57	359.70	416.50
Carabeef	68.75	88.60	103.50
Mutton	257.44	314.40	363.42
Chevon	386.18	466.50	539.20
Pork	125.04	49.90	57.84
Total	1105.98	1279.10	1480.49

*Note: * Anticipated*
Source: Department of Animal Husbandry and Veterinary Services, Chennai-6.



5.1.4.1 Outlook and Challenges:

- It may be noted that besides pre-ponderance of unrecognized slaughter houses, even the recognized slaughter houses lack of facilities for disposal of animal waste giving rise to environmental pollution and animal diseases. The slaughter houses are to be provided with much needed facilities to dispose animal waste as a sanitary measure so that environmental pollution and spread of livestock diseases can be averted.

5.1.5. Scheme for Free Distribution of Milch Cows/Small Ruminants:

With a view to ameliorating the socio-economic condition of the poorest of the poor women headed households, the State Government has distributed milch cows (Cross Breed Jersey/Cross Breed Holstein-Frisian Breeds) at free of cost since 2011-12. The free distribution of milch cows is taken up in 21 districts that are milk-deficient and having less number of milk co-operative societies. It has been programmed to distribute 60,000 milch cows over a period of five years. One milch cow is distributed to the eligible household. A beneficiary under the scheme should be a permanent resident of a village Panchayat, with one of the family members in the age group of 18 to 60 years and with no one in the family in Government/quasi Government employment and should not possess more than one acre of land. Of the total beneficiaries, SC/STs should be atleast 30 percent.

Table- 5.5 Free Distribution of Milch Animals

Category	2011-12	2012-13	2013-14*
Milch Animals Distributed (No.)			
Cross Breed Jersey	11,691	11,731	4,463
Cross Breed Holstein Frisian	309	269	28
Total	12,000	12,000	4,491
Number of Beneficiaries			
SC/ST	4,874	5,082	1,580
Others	7,126	6,918	2,911
Total	12,000	12,000	4,491
Financial (Rs. lakh)			
Allocation	5,600	4,436	4,365
Expenditure	4,132	4,290	1,535

Note: * - Upto August 2013.
Source: Department of Animal Husbandry and Veterinary Services, Chennai-6.

Upto August 2013, 28,491 milch cows were distributed as against 36,000 milch cows targeted for the three year period. Of which cross breed jersey accounted for 98 percent. Of the total number of beneficiaries the share of SC/STs formed 42 percent. By the end of August 2013, a total quantity of 1.15 lakh litres of milk was procured by Aavin network from the beneficiaries of the scheme every day. As against the allocation of Rs.144.01 crore, the total expenditure incurred towards the implementation of this scheme upto the end of August 2013 was Rs.99.57 crore (69%).

Under the free distribution of sheep/goats, 4 goats/sheep are being given free of cost to 7 lakh poorest of the poor rural landless families at a total cost of Rs.925 crore over a period of five years. To be eligible, the beneficiaries must be landless agricultural labourers, a permanent resident of the village, not own any cow/goat/sheep, not be employed in Government/quasi Government, not benefited from the free milch cows distribution scheme and one of the

Table- 5.6 Free Distribution of Sheep/Goats

Category	2011-12	2012-13	2013-14*
Small Ruminants Distributed (No.)			
Sheep	60,352	56,068	25,896
Goats	3,39,648	5,43,932	2,19,864
Total	4,00,000	6,00,000	2,45,760
Number of Beneficiaries			
SC/ST	41,902	62,056	26,405
Other	58,098	87,944	35,035
Total	1,00,000	1,50,000	61,440
Financial (Rs.lakh)			
Allocation	13,500	19,800	19,825
Expenditure	12,636	19,400	7,650

Note: * - Upto August 2013.
Source: Department of Animal Husbandry and Veterinary Services, Chennai-6.

members of the household should be the age group of 18 to 60 years. Under the scheme, 12.46 lakh sheep/goats were distributed to 3.11 lakh beneficiaries upto August 2013. Of the total animals distributed, goats constituted a higher share of 89 percent and the remaining being sheep. Of the total beneficiaries, SC/ST made up 42 percent. Upto August 2013, totally 6.81 lakh kids were born. As against the allocation of Rs.531.25 crore, the total expenditure incurred was Rs.396.86 crore (75%). The objectives of these two schemes came to fruition and made tangible dent on rural poverty in the area of operation.

5.1.6. Animal Healthcare:

With the improvement in the quality of livestock through cross-breeding programmes, the susceptibility of these livestock to various diseases including exotic diseases has increased. In order to reduce morbidity and mortality, efforts are being made by the State Government to provide better health care and technical input service through 6 Polyclinics, 139 Veterinary Hospitals, 22 Clinician centres, 2,256 veterinary Dispensaries(including rural), 56 Mobile Veterinary Units and 950 sub-centres. The important elements of animal healthcare like vaccination, deworming and artificial insemination are being carried out. Total animals treated in the above institutions in the State increased from 222 lakh in 2011-12 to 255 lakh (14.9%) in 2012-13 and it would further go up to 260 lakh in 2013-14 (2%). The number of vaccinations done declined from 451 lakh to 432 lakh (4.2%) between these two years 2011-12 and 2012-13 and it is programmed to be 450 lakh in 2013-14. With regard to deworming, there was a gradual rise from 272 lakh in 2011-12 to 298 lakh in 2013-14. Desirable technological diffusion is being noticed in the domain of animal health care.

Table- 5.7 Animals Health Care (Lakhs)

Items	2011-12	2012-13	2013-14 *
Animals Treated	222.45	255.46	260.30
Vaccinations done	451.33	431.53	450.00
Deworming done	272.42	292.66	297.80
Castration done	8.38	8.56	8.70

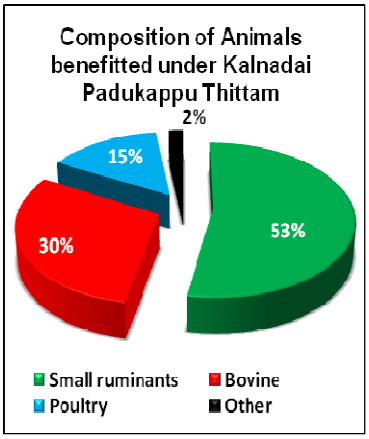
Note: * - Forecast
Source: Department of Animal Husbandry and Veterinary Services, Chennai-6.

To provide free preventive and curative animal health care at the door steps of livestock and poultry rearers in remote villages of the State, the Kalnadai Padukappu Thittam is being implemented in the State since 2000. Camps are being conducted at the rate of one camp per month in all 385 Panchayat Unions at a cost of Rs.4,200/- per camp. During the camps, various activities viz., medical, surgical, gynecological and infertility treatments, artificial inseminations, pregnancy verification, castration, deworming and preventive vaccination are being converged. There was a gradual increase in the total number of animals covered under the scheme. It increased from 59.28 lakh in 2011-12 to 67.08 lakh (13.2%) in 2012-13. In 2013-14, it is likely to go up further to 72.05 lakh. Of the total animals benefitted, small ruminants comprised a higher share of 53 percent followed by bovines 30 percent, poultry 15 percent and the rest being other animals. The average

Table- 5.8 Animals benefitted under Kalnadai Padukappu Thittam (lakhs)

Items	2011-12	2012-13	2013-14 *
Number of Camp conducted	5,500	5,500	5,500
Animals benefited	59.28	67.08	72.05
Farmers Benefited	6.45	8.31	9.52
Average Animal Attendance per camp (Nos)	1,078	1,220	1,515

Note: * - Forecast
Source: Department of Animal Husbandry and Veterinary Services, Chennai-6.



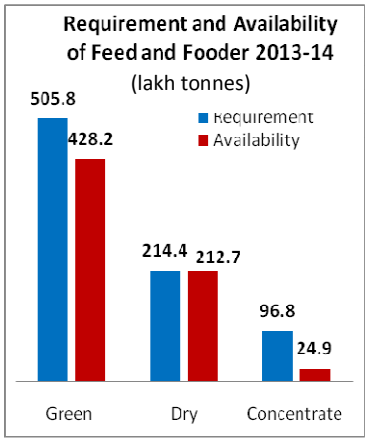
number of livestock rearers benefited under the scheme per camp improved from 117 in 2011-12 to 151 in 2012-13. It is likely to be of the order of 173 in 2013-14. The average animal attendance per camp also witnessed a steady improvement. The total expenditure incurred towards the implementation of the scheme each year was Rs.253 lakh.

5.1.6.1 The Way Forward:

The following measures will strengthen the animal health sector:

- Sensitization of general public on Avian Influenza through Information, Education and Communication (IEC) campaigns.
- The adequate technical manpower may be provided to the veterinary health care institutions to support health related programmes for the massive livestock population.
- Adequately providing proper infrastructure and equipment to the veterinary health care institutions is necessary for the timely diagnosis and treatment of animal diseases.
- Emphasis also needs to be given to strengthen the mobile veterinary services to ensure door-step veterinary support, particularly in inaccessible areas.
- A strong programme for the supply of sufficient veterinary vaccines is imperative. Each veterinary health care institution is to be provided cold storage facilities to adequately store vaccines.

5.1.7. Feed and Fodder Development:



In 2011-12, the total area under fodder crops in the State was 2.40 lakh hectares accounting for about 4 percent of total cropped area. The competing pressures on land caused the extent of grazing lands of 3.75 lakh hectares in 1950s to gradually declined to 1.09 lakh hectares in 2012-13. As a result, its share in the total geographical area came down from 2.8 percent in 1950s to 0.8 percent in 2012-13. There is a wide gap between the demand for and availability of feed and fodder. The gap is more conspicuous in respect of green fodder. The total estimated requirement of green fodder in the State varied between 482 lakh tonnes in 2011-12 and 506 lakh tonnes in 2013-14. As against the estimated requirement, the shortfall stood at 147.8 lakh tonnes in 2011-12, 92.4 lakh tonnes in 2012-13 and 77.6 lakh tonnes in 2013-14. The shortage of green fodder was mainly on account of the large population of livestock and the limitations to increase the area under fodder cultivation due to the priority required to be given to foodgrains and other cash crops. In respect of dry fodder, the estimated total requirement in the State ranged between 204.2 lakh tonnes in 2011-12 and 214.4 lakh tonnes in 2013-14. The availability of dry fodder varied between 202.6 lakh tonnes in 2012-13 and 216.0 lakh tonnes in

Table-5.9 Estimated Requirement and Availability of Fodder and Feed (lakh tonnes)

Types of Fodder	2011-12	2012-13	2013-14*
Green fodder			
Requirement	481.7	481.7	505.8
Availability	333.9	389.3	428.2
Gap	147.8	92.4	77.6
Dry fodder			
Requirement	204.2	204.2	214.4
Availability	216.0	202.6	212.7
Gap	---	1.6	1.7
Concentrate			
Requirement	55.3	62.3	96.8
Availability	42.6	28.8	24.9
Gap	12.7	33.5	71.9

Note: * - Forecast.
Source: Department of Animal Husbandry and Veterinary Services, Chennai-6.

2011-12. In this case, the gap between the estimated requirements and availability was meagre at 1.0 percent in both the years 2012-13 and 2013-14. With regard to concentrates the estimated requirement in the State had steadily increased from 55.3 lakh tonnes in 2011-12 to 96.8 lakh tonnes in 2013-14. However, against this requirement there was a steady decline in its availability. It declined from 42.6 lakh tonnes in 2011-12 to 24.9 lakh tonnes in 2013-14. Consequently, the shortfall between the estimated requirement and the availability had increased alarmingly by almost six fold.

Under Government fold, four fodder seed producing centres are functioning in the State. With the concerted efforts of the State, the production of fodder slips, seeds and seedlings went up in the State farms during 2012-13 as compared to 2011-12. The total area covered for fodder development under various schemes (State fodder Development Scheme, Accelerated Fodder Development Programme and Centrally Sponsored Feed and Fodder Programme) in farmers' fields as well as in Government farms rose from 10,790 hectares in 2011-12 to 12,342 hectares in 2012-13.

Comprehensive and authentic database on production and distribution of concentrates in the State by public and private sectors needs to be built up for the benefit of the stake holders. With a view to ensure availability of good quality concentrates, a frame work with curbs on sale of poor quality produce, increasing private participation in production and distribution and quality control needs to be put in place.

5.1.7.1 The Way Forward:

The prohibitive cost of cattle feed coupled with erratic supply of green fodder due to frequent drought conditions aggravate the situation. The following are the priority areas to bridge the gap between availability and requirement of fodder:

- Improving fodder production by promoting high yielding fodder varieties.
- Taking into account unforeseen situations, "Fodder Banks" may be established to procure surplus fodder from the farmers in areas where it is available in abundance and convert the same into silage or fodder blocks for storage and supply to the deficient areas.
- Extension machinery with specialized manpower may be deployed for popularization of good fodder varieties and for more efficient use of crop residues. Post-harvest management interventions are necessary to reduce the wastage of crop residues and its enrichment in quality. Wastage and alternative use of crop residues may be discouraged through a well thought out system of incentives and disincentives.
- Emphasis may be laid on optimum utilization of wasteland to grow fodder.
- The Forest Department can also play a major role in augmenting fodder production. With its help, degraded forest areas can be used for augmenting growth of fodder varieties of grasses, legumes, and trees under area specific silvi-pastoral systems.
- Propagation and promotion of Azolla production may be taken up in large scale.

5.2. Fisheries:

Fisheries is recognized as a powerful income and employment generator as it stimulates growth of a number of subsidiary industries and is a source of cheap and nutritious food for the people. It also is a foreign exchange earner. With the contribution of 7 percent to all India fish production, Tamil Nadu ranks fifth among the States. As per the latest Statistics available, the contribution of fisheries to total Gross State Domestic Product (at 2004-05 prices) increased from Rs.2,748 crore in 2011-12 to Rs.2,777 crore in 2012-13 and further

Table- 5.10 Contribution of Fisheries				
Year	In terms of GSDP (Rs. crore)	Share in GSDP (%)		
		Agriculture and Allied	Primary Sector	State
2009-10	2,457	7.9	7.5	0.7
2010-11	2,657	8.0	7.6	0.7
2011-12 RE	2,748	7.5	7.1	0.6
2012-13 QE	2,777	8.5	7.9	0.6
2013-14 AE	2,796	8.0	7.5	0.6

Note- RE- Revised Estimates, QE- Quick Estimates, AE Advanced Estimates
Source: Department of Economics and Statistics, Chennai-6.

likely to go up to Rs.2,796 crore in 2013-14. It constituted 8.0 percent of the total contribution of agriculture and allied sectors, 7.5 percent of the primary sector and 0.6 percent of the total GSDP in 2013-14.

The total fishermen population in the State was 11.03 lakh which formed a share of 1.5 percent of the State's total population. The fisherman population comprising those engaged in marine and inland fishing was in the ratio of 70:30. There was a steady increase in total fish catches in the State in the recent past. It improved from 6.12 lakh tonnes in 2011-12 to 6.20 lakh tonnes in 2012-13 (1.3%) and further likely to go up to 6.23 lakh tonnes in 2013-14 (0.5%). For the rise in total fish production between the years 2011-12 and 2012-13, the contribution of inland fisheries (2.7%) was higher than that of marine (0.7%). Corresponding to the increase in total fish catches in the State, the percapita availability of fish per year went up from 8.48 kgs in 2011-12 to 9.00 kgs in 2013-14.

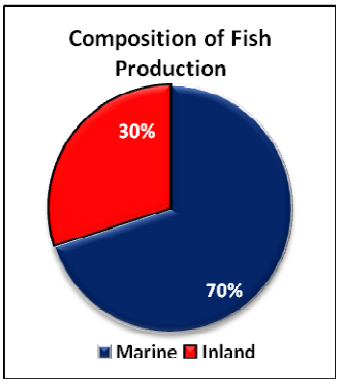
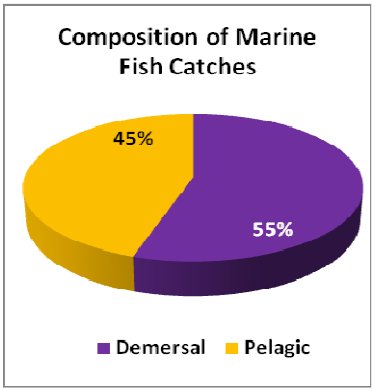


Table- 5.11 Total Fish production in the State (lakh tonnes)			
Year	Marine	Inland	Total
2009-10	4.01	1.70	5.71
2010-11	4.25	1.72	5.97
2011-12	4.27	1.85	6.12
2012-13	4.30	1.90	6.20
2013-14*	4.32	1.91	6.23

Note: * Forecast
Source: Department of Fisheries, Chennai-6.

5.2.1. Marine Fisheries:



The total marine fishermen population of 9.25 lakh is spread over 608 coastal villages in 13 districts. The three districts viz., Nagapattinam, Ramanathapuram and Kanniyakumari put together made up 57 percent of the total marine fishermen population in the State. Tamil Nadu with its coastal length of 1076 kms and continental shelf of 41,412 sq.km has ample scope for marine fish catches. It accounted for 13.0 percent of the total length of the coast line and 8.0 percent of the total continental shelf of India. In the State, there are eight fishing harbours (3 major + 5 medium), 8 jetties and 363 fish landing centres. The total estimated marine fish potential in the State was 7.00 lakh tonnes. In none of the recent years has the actual marine fish catch matched the estimated potential.

Table- 5.12 Marine Fish Catches By Varieties (lakh tonnes)				
Varieties	**2010-11**	**2011-12**	**2012-13**	**2013-14***
Demersal	2.32	2.33	2.35	2.24
Pelagic	1.93	1.94	1.95	2.08
Total	4.25	4.27	4.30	4.32

Note: * Forecast.
Source: Department of Fisheries, Chennai-6.

Tamil Nadu with the present level of marine fish catch ranks fourth at the all India level. The marine fish production in the State gradually grew from 4.25 lakh tonnes in 2010-11 to 4.27 lakh tonnes in 2011-12 (0.5%) and further to 4.30 lakh tonnes in 2012-13 (0.7%). In 2013-14, the marine fish catches is likely to be in the order of 4.32 lakh tonnes. Of the total fishproduction, the demersal varieties accounted for 55 percent and the pelagic varieties 45 percent. About 70 percent of the State's marine fish

catch was from 5 districts viz., Ramanathapuram (20%), Nagapattinam (17%), Thoothukudi (13%), Kanniyakumari (10%) and Pudukkottai (10%).

Marine fishing is being done through 5,274 mechanized boats and 29,002 non-mechanized boats in the State. Of the total marine fish landings in the State, the catches by mechanized boats by and large hovered around 55 percent and that of non-mechanized boats 45 percent in a year. On an average, the fish catches per mechanized boat was 45.0 tonnes and that of non-mechanized boat 7.0 tonnes.

Table- 5.13 Marine Fish catches by Boats
(lakh tonnes)

Year	By Mechanized Boats	By Non-Mechanized Boats	Total
2010-11	2.33	1.92	4.25
2011-12	2.34	1.93	4.27
2012-13	2.36	1.94	4.30
2013-14*	2.38	1.94	4.32

Note: * Forecast.
Source: Department of Fisheries, Chennai-6.

5.2.1.1 Outlook and Challenges:

Currently the demand for fish increased due to changes in consumption pattern of growing population in the State. The fish resources in the inshore area had been over exploited. Further, there is a decline in fish catches in inshore areas due to depleted fish stock. The growing demand could be met from the exploitation of offshore resources to a optimum level by technologically upgradation and skill upgradation and adoption of sustainable practices. Presently, the fisher folk in Palk Bay are constrained by the lack of properly defined maritime rights and transgression of rules and regulations by Srilankan Navy. While a permanent solution to this issue lies in the retrieval of Kachatheevu island which was wrongly ceded to Srilanka in 1974, day to day problems need to be sorted out by holding mutual discussions between the fishermen communities in both countries so as to ensure safety of the fishermen while fishing in the sea.

While demand for fish products is on the rise continuously, marine fish market chains generally suffer from unhygienic conditions, poor handling of the fish and large wastage in terms of both lost product and profits. Quantity lost due to poor quality of up to 15 percent of the harvest is common. Small-scale fishers are often unable to gain access to more efficient marketing systems and supporting infrastructure (ice, cold storage, etc.) that would lead to better quality and prices. More efforts may be initiated to create adequate process infrastructure facility in marine sector.

5.2.2. Inland Fisheries:

The total water spread area in the State is estimated at 3.73 lakh hectares, comprising reservoirs 0.52 lakh hectares, tanks and ponds 2.55 lakh hectares, brackish water 0.56 lakh hectares, and derelict water bodies 0.10 lakh hectares, provides scope for inland fisheries. It accounted for 5.1 percent of the total water spread area available for inland fisheries at all India level. The total inland fishermen population in the State is about 2.2 lakh spread over all districts. The increase in total inland fish catches was marginal in recent years due to drought condition. It was 1.85 lakh tonnes in 2011-12 and rose to 1.90 lakh tonnes in 2012-13 (2.7%). It is likely to stagnant at this level during 2013-14. As against the estimated potential of 4.5 lakh tonnes, the actual fish catches from inland sources fell short by about 55 percent.

Table- 5.14 Inland Fish Production by Sources (%)

Source	2011-12	2012-13	2013-14*
Major Reservoirs	1.8	2.2	2.2
Intensive inland fish culture tanks	2.0	2.0	2.0
Fish farmers Development Agencies	4.7	4.7	4.7
Seasonal Tanks	82.2	81.8	81.7
Derilict Water	0.2	0.2	0.2
Aquaculture farms	5.7	5.8	5.9
Brackish water	3.4	3.3	3.3
Total (lakh tonnes)	1.85 (100.0)	1.90 (100.0)	1.91 (100.0)

Note: * Forecast,
Source: Department of Fisheries, Chennai-6.

Source-wise inland fish catches revealed that fish catches from seasonal tanks accounted for as high as 82 percent of the total inland fish catches in the State.

5.2.2.1 Outlook and Challenges:

Inland fish catches are conditioned by aberrations of rainfall, less retention of water in the water bodies, inadequate fish seed and feed and absence of proper marketing. Efforts may be directed towards the development of scientific storages and marketing of inland fisheries. To augment inland fisheries, the shortfall in fish seed and feed have to be overcome. Genuine inland fishery cooperative societies need to be promoted and strengthened and provided with necessary financial support to take up culture and capture fisheries with the active role of fisherwomen. Long term leasing policy for Public Works Department tanks/ponds and improvement of extension services, input supply would boost fishing activities. Provision may be made for financing inland fish culture in areas where availability of water is not a constraint. Fresh water fish culture needs to be promoted in seasonal tanks/ponds owned by Panchayats.

Farmers have generally shown interest in taking up fresh water fish culture. Such farmers are being discouraged by commercial tariff charged by Tamil Nadu Generation and Distribution Corporation Limited for such activity and consequently they revert to paddy cultivation. Since fresh water fish culture ponds also act as rain water harvesting structures, help in recharging of ground water; provide scope for integrated farming, a concessional tariff instead of full commercial tariff could be applied to encourage the farmers to take up fish culture.

Comprehensive and authentic data base on fish seed and feed production and distribution in the State by private and public sector needs to be built up for the benefit of all stakeholders.

5.2.3 Welfare Measures:

To mitigate the sufferings of the fishermen during the fishing ban period (April 15th to May 29th in the east coast region and June 15th to July 29th in the west coast region every year), the Government increased the relief assistance to marine fishermen families from Rs.1000/- to Rs.2000/- since 2011. A sum of Rs. 31.19 crore was distributed to 1.56 lakh fishermen families during 2012-13. In 2013-14, a sum of Rs.31.31 crore has been distributed to benefit 1.57 lakh fishermen families. Apart from this, a special allowance of Rs.4000/- to marine fishermen families in 13 coastal districts was also distributed since 2011-12. In 2012-13, a total amount of Rs.64.60 crore was disbursed to 1.61 lakh families. In 2013-14, it is proposed to distribute Rs. 71.40 crore to 1.79 lakh families. Under the Group Accident Insurance Scheme, the fishermen are given Rs.1.00 lakh in the case of death/permanent disability and Rs.50,000/- for partial disability. The number of fisherman got insured registered an increase from 6.08 lakh in 2011-12 to 6.21 lakh in 2012-13 (2.1%) and is likely to go up to 6.51 lakh in 2013-14 (4.8%). The number of persons benefited under the scheme during 2011-12 was 339 fishermen and in 2012-13 it was 126 fishermen. In 2013-14 upto the end of January 2014, 181 persons were benefited. A total amount of Rs. 2.15 crore was disbursed during 2011-12 and Rs.1.18 crore in 2012-13 and it was Rs 1.25 crore in 2013-14.

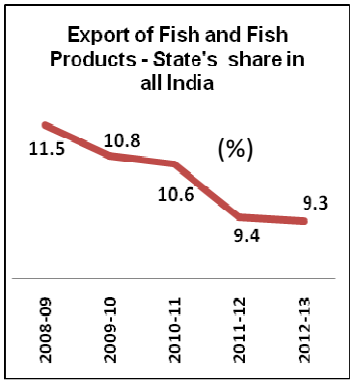
To overcome the increasing cost of kerosene, the State Government enhanced the sales tax exemption and increased the subsidized industrial kerosene from 200 to 250 litres per craft per month since 2012-13 benefiting 5,500 traditional boats. During 2011-12, the total

amount sanctioned was Rs.47.23 crore and it increased to Rs.47.60 crore in 2012-13. An amount of Rs.53.87 crore was sanctioned during 2013-14. Under National Savings-cum-Relief Scheme of marine fishermen, each fisherman contributes Rs.600/- at the rate of Rs.70/- per month as share for the first eight months and subsequently Rs.40/- for 9th month in a year. The contribution is matched with Rs.1,200/- released equally by Central and State Government. A sum of Rs.1,800/- is distributed to the beneficiaries in the lean season. During 2012-13, a total sum of Rs.23.65 crore was disbursed to 1.98 lakh fishermen belonging to 13 coastal districts. For the year 2013-14, a sum of Rs.24.72 crore was sanctioned to benefit 2.03 lakh fishermen. A similar relief scheme is also being implemented to benefit marine fisherwomen. During 2012-13 under the scheme Rs.19.94 crore was disbursed to 1.67 lakh fisherwomen of 13 districts. During the year 2013-14, it is likely to distribute a sum of Rs.22.07 crore to benefit 1.84 lakh fisherwomen in the State.

5.2.4 Brackish Water and Aquaculture:

Tamil Nadu has a total of 56,000 hectare of potential shrimp farming area. The entire water spread area is under the control of the Government. Apart from that a total number of 2,748 private shrimp farms covering a total extent of 6,019 hectares have taken up for brackish water aquaculture. According to the mandatory provision of Coastal Aquaculture Authority, so far 1,667 farms (60%) with a total extent of 4,604 hectares (76%) got registered. The total production of shrimp in the State increased from 16,777 tonnes in 2011-12 to 17,131 tonnes in 2012-13 (2.1%). It is likely to go up to 17,304 tonnes in 2013-14 (1%). Of the total shrimp production, the composition of private and Government was by and large remained in the ratio of 37:63. To promote sustainable eco-friendly aquaculture practices,12 Fish Farmers Development Agencies (FFDA) and 5 Brackish Water Fish Farmers' Development Agencies (BFDA) have been merged into District Fisher Farmers Development Agencies (DFDA) covering all districts except Chennai and The Nilgiris. The aquaculture activity has attracted severe criticism from the environmentalists due to the percolation of salt into land area in the vicinity of the farms, making them saline and unfit for any other agricultural purposes.

5.2.5 Fish Export:



After processing, fish and fish products are exported through Chennai and Thoothukudi ports to USA, European Union, South East Asia, Middle East and China and good export earnings accrued to the State. There are 57 approved modern sea food processing plants and 64 approved dried fish production exporting centres functioning in the State. Over 4,000 persons are directly and 12,000 persons are indirectly employed in the export processing industry in the State. There was a fluctuating trend in the total quantity of fish and fishery products export in the State. It declined from 86,182 tonnes in 2010-11 to 80,738 tonnes in 2011-12 (6.3%). In 2012-13, it rose to 86,585 tonnes (7.2%). Of the total quantity exported, the export of shrimp alone accounted for as much as 63 percent. Contrary to this trend, the value of earnings from fish and fishery products exports gradually improved from Rs.2,860 crore in 2010-11 to Rs.3,029 crore in 2011-12 (5.9%) and further

Table- 5.15 Export of Fish and Fish Products

Year	Tamil Nadu		All India	
	Quantity (tonnes)	Value (Rs. crore)	Quantity (tonnes)	Value (Rs. crore)
2010-11	86,182	2,860	8,13,091	12,901
2011-12	80,738	3,029	8,62,021	16,597
2012-13	86,585	3,331	9,28,215	18,856

Source: Department of Fisheries, Chennai-6.

increased to Rs.3,331 crore in 2012-13. Likewise the average earnings per tonne increased from Rs.3.31 lakh in 2010-11 to Rs.3.75 lakh in 2011-12 and further to Rs.3.85 lakh in 2012-13. The State's share in total quantity of fish and fish products exports at the all India level fell from 10.6 percent in 2010-11 to 9.3 percent in 2012-13. Its contribution to total earnings at the all India level slipped from 18.3 percent in 2011-12 to 17.7 percent in 2012-13.

5.3 Forestry:

Forests are home to rich biodiversity. Forest resources had been traditionally exploited for several products, both by the people living within and in the fringes of forests. Many benefits like harnessing of water, agricultural prosperity and food security also flow to the communities from forests. As per the latest statistics, the contribution of forestry and logging to total GSDP steadily increased from Rs.1,948 crore in 2011-12 to Rs.2015 crore in 2012-13 (3.4%) and is further likely to go up to Rs.2,098 crore in 2013-14 (4.1%). As against the 12th Plan target of 5 percent, the contribution of the sub-sector in the first two years of the plan was lower. However, its share to the total GSDP of the primary sector steadily swelled from 5.0 percent in 2011-12 to 5.8 percent in 2012-13 and is estimated at 5.6 percent in 2013-14. In all these years, its share in State's total GSDP on the whole was static at 0.4 percent.

Table-5.16 Contribution of Forestry and Logging

Year	In terms of GSDP (Rs. crore)	Share in GSDP (%)	
		Primary Sector	State
2009-10	1,840	5.6	0.5
2010-11	1,901	5.4	0.5
2011-12 RE	1,948	5.0	0.4
2012-13 QE	2,015	5.8	0.4
2013-14 AE	2,098	5.6	0.4

Note- RE- Revised Estimates, QE- Quick Estimates, AE Advanced Estimates
Source: Department of Economics and Statistics, Chennai-6.

5.3.1 Forest Coverage:

The total area under forests in the State was by and large static. It was 22.88 lakh hectares as of 2013-14. Its proportion to total geographical area was 17.59 percent. It was also lower than the national average of 22 percent and 33 percent stipulated by the National Forest Policy. Among the districts the ratio was the highest in The Nilgiris (54.7%). In Thiruvarur and Thoothukudi districts the proportion of forests cover to total geographical area was negligible and it is a cause for concern. Only in three districts viz., Vellore (37.6%), Dharmapuri (40.3%) and The Nilgiris (54.7%) was the proportion of forests to geographical area more than 33 percent as stipulated by the Forest Policy. In 12 districts viz., Viluppuram (19.7%), Vellore (37.6%), Dharmapuri (40.3%), Krishnagiri (29.9%), Coimbatore (23.8%), The Nilgiris (54.7%), Erode (30.0%), Salem (20.9%), Dindigul (23.2%), Theni (28.5%), Tirunelveli (21.2%) and Kanniyakumari (26.9%) the proportion of forests coverage to geographical area was higher than that of State's average. The 9 districts viz., Viluppuram (6.23%), Vellore (10.02%), Dharmapuri (7.93%), Krishnagiri (6.73%), Coimbatore (7.79%), The Nilgiris (6.12%), Erode (10.81%), Dindigul (6.37%) and Tirunelveli (6.33%) put together accounted for more than 68 percent of the total forests coverage in the State. In percapita terms, there was 0.04 hectare of forests in Tamil Nadu as against the National average of 0.08 hectare.

Table- 5.17 Forest Coverage (lakh hectares)

Category	2011-12	2012-13	2013-14*
Reserved Forests	19.39	19.46	19.46
Reserved Lands	2.18	2.15	2.15
Unclassified Forests	1.31	1.27	1.27
Total Forests Area	22.88	22.88	22.88

Note: * Forecast,
Source: Principal Chief Conservator of Forests, Chennai-15.

Of the total area under forests, reserved forests alone accounted for a higher share of 85.1 percent, followed by reserved lands 9.4 percent and the remaining being unclassified forests. Among the three constituents of the forests, the extent of reserved forests was the

highest in Erode (2,440 sq.km) and the lowest in Thiruvarur (0.37 sq.km). There was no extent of reserved forests in Thoothukudi district. In respect of reserved lands it was the highest in Theni (486 sq.km) and the lowest in Ariyalur (0.03sq.km). In Chennai, Kancheepuram, Thiruvannamalai, Thiruvarur and Nagapattinam there was no availability of reserved lands. The extent of unclassified forests was the highest in Villuppuram (375 sq.km) and the lowest in Dindigul (0.08 sq.km). There was no existence of unclassified forests in Chennai, Thiruvallur, Cuddalore, Thiruvannamalai, Namakkal, Karur, Perambalur, Ariyalur, Pudukkottai, Thiruvarur, Nagapattinam, Theni and Thoothukudi. Tamil Nadu forests largely belonged to three types viz., Tropical moist deciduous, Tropical dry deciduous and Tropical dry thorn. These three combined together accounted for 88 percent of the total forests area in the State.

Table- 5.18 Forests Coverage By Type (%)

Category	2012-13	2013-14*
Tropical Wet Evergreen	2.6	2.6
Tropical Semi Evergreen	1.0	1.0
Tropical Moist Deciduous	10.9	10.9
Littoral and Swamp	1.0	1.0
Tropical Dry Deciduous	55.0	55.0
Tropical Dry Thorn	21.9	21.9
Tropical Dry Evergreen	1.1	1.1
Sub-Tropical Broad Leaved	5.0	5.0
Montane Wet Temperate	1.5	1.5
Total (lakh hectares)	22.88 (100.0)	22.88 (100.0)

Note: * Forecast,
Source: Principal Chief Conservator of Forests, Chennai-15.

5.3.2 Diversion of Forests Land:

Forests lands are diverted for public causes such as erection of electric transmission lines, irrigation projects, roads, tele-communications, water supply and also for field firing ranges to the Indian Army etc., Ever since Forests Conservation Act 1980 came into force a total extent of 4,452 hectares of forests land had been diverted for non-forestry purposes. Among the activities, diversion of land for Field Firing Ranges to the Indian Army accounted for a large share of 61.0 percent followed by Mining and quarrying 9.6 percent, erection of electric transmission lines 8.9 percent, execution of irrigation projects 7.1 percent, for provision of water supply 3.9 percent and laying of roads 2.4 percent. As per the conditions laid down by the Government of India while diverting the forests land to non-forestry purpose, the user agency of forests land has to identify suitable non-forest land twice the extent of the forests land diverted for carrying out compensatory afforestation. In this direction a total amount of Rs.14.88 crore was collected to take up compensatory afforestation.

Table 5.19 Diversion of Forests Land in the State (From 1980 to August 2013)

Purpose	Hectare
Electric transmission line	394.0
Energy generation project	4.8
Hydel & Irrigation projects	315.5
Mining & Quarrying	426.7
Field firing	2717.4
Railway line	3.4
Roads	108.8
Telecom & Telephone line	8.3
Textile mill	6.2
Water supply	172.6
Others	294.3
Total	4451.6

Source: Environment and Forests Department, Chennai-9

5.3.3 Afforestation Programmes:

As the scope for increasing the forests area was not feasible, enhancing tree cover outside the forests by encouraging tree cultivation in private farm lands, fallow lands, tank foreshores, poromboke lands, road sides and canal banks are taken up. To achieve these objectives, under Massive Tree Planting Programme, 64 lakh seedlings were planted in 32 districts at a cost Rs.29.44 crore in 2011-12. During 2012-13, a total of 65 lakh seedlings were planted at a cost of Rs.43.55 crore throughout the State.

To create timber resource as well as to prevent soil erosion a comprehensive scheme to raise teak plantation in padugai lands covering an area of 20,700 hectares is being carried

out in the districts of Madurai, Dindigul, Sivagangai, Thanjavur, Thiruvarur, Trichy and Villupuram at a cost of Rs.35.31 crore during the six year period (2008-2014). With a view to restore the loss of trees in Cuddalore and Viluppuram districts due to Thane cyclone, planting 37.25 lakh seedlings of tree spices like teak, casuarina, eucalyptus, etc over a period of four years (2012-13 to 2015- 16) is being undertaken at a cost of Rs.14.96 crore. Under National Afforestation Programme, afforestation works have been carried out over an area of 67,815 hectares at a cost of Rs.110.43 crore through 33 Forest Development Agencies from 2002-03 onwards. The 13th Finance Commission sanctioned Rs.142.48 crore as grants-in-aid for maintenance of forests in the State for 2010-11 to 2014-15. To restore the de-graded forests, the Tamil Nadu Afforestation Project Phase-II is being implemented since 2005-06 at a cost Rs.567.42 crore with funding from Japan International Co-operation Agency (JICA) on the basis of Joint Forest Management. During 2012-13 maintenance works were carried out in 47,500 hectares at a cost of Rs.78.05 crore with the assistance from Japan International Co-operation Agency. Besides, maintenance works over 31.50 hectares were carried out with State Government funds.

5.3.4 Outlook and Challenges:

The forestry sector in the State faces a number of constraints as indicated below:

- Fire is one of the major causes of the loss in the extent of forests of Tamil Nadu in the past and even to-day it continues to be the major threat. Wild fire can result in complete destruction of organic matter and bring about changes in the physical, chemical and biological properties of the upper layer of the soil affecting natural regeneration and causing degradation.
- Head loading of firewood, fodder, small timber etc., is still in vogue and is a cause for concern.
- Encroachments in the forests areas to an extent of 15,138.88 hectare have taken a toll on the forests cover.
- Illicit felling of species like precious sandal and rosewood has almost completely eliminated the spices in vast stretches of Tamil Nadu forests.
- Collection of bark, cutting of branches for collection of fruits of certain species and setting fire for collection of some of the minor forest produce was also a threat to forests.
- Natural causes of cyclone, flood and landslides has also reduced the extent of forest.
- Emergence of man-animal conflict.

5.3.5 The Way Forward:

There is little scope in expanding forests coverage. The only possibility is to increase the extent of forest is to increase the green cover outside the forest area. Towards achieving this, urban forestry needs to be scaled up from mere occasional planting of trees on roadsides and erecting tree guards to holistically meeting the green space needs of urban population. Enhancing NTFP (Non Timber Forest Produce) resources and streamlining production harvest and marketing them. Promoting tree cultivation on private and community lands are considered to be efficient with special initiatives. Besides financial and technical assistance in raising forests in private lands is also need of the hour. Towards garnering public support and appreciation of State's efforts towards conservation of forests, the forestry extension and outreach efforts needs to be further strengthened. The transfer of technology from lab to land which is presently very slow in this sector may be enhanced.