

5. Animal Husbandry, Fisheries & Forestry

While agriculture holds centre stage in the rural economy, the allied sector namely animal husbandry, fisheries and forestry holds the key for employment and income generation. Growth of allied sector has become an imperative given the continued pressure on land as evidenced by the dependence of the vast majority of the population on the primary sector. The allied sectors have potential for rapid growth. Agricultural allied activities comprise animal husbandry, fisheries and forestry and logging which provide gainful employment opportunities to both rural and urban population. The animal husbandry sector is instrumental in terms of creation of value addition and earning of foreign exchange. Animal husbandry activities are all important both as principal activity and as subsidiary activity along with agriculture. Fisheries sector also plays a vital role in provision of employment, meeting nutrition and protein requirements besides earning foreign exchange. Forestry sector not only plays a crucial role in maintaining ecological balance but also contributes to livelihood security. The sector contributes significantly to economic growth in that it is an environmental capital in growth process. Fishery sector had contributed 1.22 Per cent (Rs.229719 lakhs) to the GSDP at current prices (2004-05) and 0.38 Per cent (Rs.72180 lakhs) by the Forestry Sector.

Animal Husbandry:

India abounds in cattle and buffaloes population. It accommodates 57 per cent of the world's buffalo's population and 16 per cent of the cattle population. Despite this, a large proportion of these animals are reared under sub-optimal conditions due to poverty of livestock owners. India is the largest producer of milk in the world.

A perusal of total livestock population in Tamil Nadu since 1982 exhibits that there are variations across the Quinquennial Censuses particularly with reference to the population of cattle, sheep and goats. With respect to buffaloes, a steady decline has been noticed since 1982. As per the latest Quinquennial Livestock Census 2004, total livestock population stood at 249.41 lakhs - cattle at 91.41 lakhs, buffaloes 16.58 lakhs, sheep 55.93 lakhs, goats 81.77 lakhs and others 3.72 lakhs. In the case of poultry population, it increased by leaps and bounds - 182.84 lakhs in 1982, 359.41 lakhs in 2001 and 865.9 lakhs in 2004. Acceleration in the poultry population is mainly due to heavy demand. Fodder problem is the main cause for decrease in cattle and buffaloes population. Government endeavors to upgrade the indigenous cattle and buffaloes to high quality animals.

Table - 1: Trends in Livestock Population (lakhs) - Tamil Nadu

Year	Cattle	Buffaloe	Sheep	Goats	Others	Total	Poultry
1982	103.66 (-4.03)	32.12 (4.35)	55.37 (4.69)	52.46 (24.85)	18.26 (135.31)	261.87 (8.45)	182.84 (27.44)
1989	93.53 (-9.77)	31.28 (-2.62)	58.81 (6.21)	59.20 (12.85)	20.85 (14.18)	263.66 (0.68)	215.70 (17.97)
1994	90.96 (-2.75)	29.31 (-6.30)	56.12 (-4.57)	58.65 (-0.93)	21.75 (4.32)	256.79 (-2.61)	238.54 (10.59)
1997	90.47 (-0.54)	27.41 (-6.48)	52.59 (-6.29)	64.16 (9.39)	24.76 (13.84)	259.39 (1.01)	365.11 (53.06)
2001 [@]	91.82 (1.49)	27.08 (-1.20)	53.47 (1.67)	68.08 (6.11)	4.78 ^{\$} --	245.22 ^{**} (-5.46)	359.41 (-1.56)
2004	91.41 (1.03)	16.58 (-39.51)	55.93 (6.35)	81.77 (27.45)	3.72 --	249.41 (-3.85)	865.9 (97.62)

[@] Inter Census Estimate; ^{\$} Relates to pigs; ^{**} Provisional

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

The cattle population is concentrated in the districts of Villupuram, Thiruvannamalai, Vellore, Dharmapuri, Thanjavur, Pudukottai Coimbatore, Cuddalore Dindigul and Kancheepuram whereas the buffaloes are preponderant in the districts of Namakkal, Villupuram, Kancheepuram, Erode, Salem and Thiruvallur. These districts are called **milk belts** of the State.

Productivity of cattle and buffaloes in Tamil Nadu is relatively low, going by the international standards. This is due to the predominance of indigenous and native stock of animals. To improve the cattle stock, the Tamil Nadu Livestock Development Agency has brought all breeding activities under a single umbrella and an artificial insemination programme is being carried out. A decline in breedable female population is noticed in 2004 Quinquennial Livestock Census - from 47.12 lakhs in 2001 to 41.17 lakhs in 2004 in respect of cattle and from 15.15 lakhs to 9.01 lakhs in respect of buffaloes. The share of breedable female exotic and crossbred cattle accounted for 28.32 per cent (25.89 lakhs) and indigenous and native pure works out to 16.72 per cent (15.28 lakhs) of the total cattle population of 91.41 lakhs during 2004. Among breedable female buffaloes population the share of murrh graded was 17.49 per cent (2.90 lakhs) and indigenous 36.85 per cent (6.11 lakhs) out of the total buffalo's population of 16.58 lakhs during 2004.

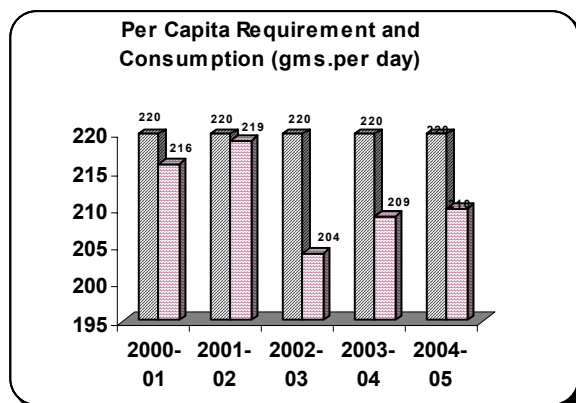
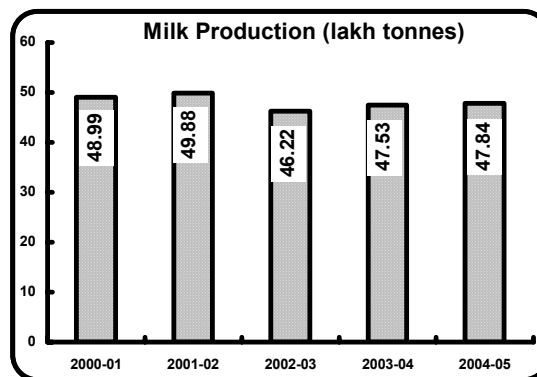
Table - 2 : Breedable Female Population
(Lakhs)

Category	1997	2001	2004
Cattle			
- Exotic and Crossbred	12.61	18.78	25.89
- Indigenous and Native pure	32.02	28.34	15.28
Total	44.63	47.12	41.17
Buffaloes			
- Murrah & Graded	3.74	4.97	2.90
- Indigenous	13.64	10.18	6.11
Total	17.38	15.15	9.01

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

Milk Production and Availability:

In conformity with the growing population, rising urbanisation and changing consumption pattern and increasing per capita income, milk production has grown to meet the current as well as the future demands. The milk production doubled in 1980's, whereas the pace of growth in milk production somewhat slowed down in 1990s.



Milk production rose from 46.22 lakh tonnes in 2002-03 to 47.53 lakh tonnes in 2003-04 and further improved to 47.84 lakh tonnes in 2004-05. Despite increase in milk production, State's share during 2003-04 at All India level hovered around 5.9 per cent in 2001-02 and 5.4 per cent in 2003-04. The per capita availability of milk per day was 204 gms. in 2002-03, 209 gms. in 2003-04 and 210 gms in 2004-05, the increase being 2.9 per cent.

Tamil Nadu Cooperative Milk Producer's Federation procured milk through 7117 and 7493 Primary Cooperative Societies in the State during 2003-04&2004-05. The total milk production by societies had improved by 17.6 per cent from 18.88 LLPD in 2002-03 to 22.21 LLPD in 2003-04 and further improved by 7.0 to 23.76 LLPD in 2004.05. These societies procured more than 17 per cent of the State total milk production of 47.53 lakh tonnes in 2003-04. The quantity of milk sold had also gone up from 6.53 LLPD in 2002-03 to 6.91 LLPD in 2003-04 and improved to 8.09 LLPD(17.1%) in 2004-05. The value was to the tune of 85.71 lakh per day and 90.70 lakh per day respectively. The value of the milk products had plummeted in the case of the products such as butter, ghee, tetra pac - SM1Lr, Tetra pac - SM 200 ml, cheese, mysorepak, butter milk and flavoured milk during 2003-04 compared to the preceding year 2002-03. The value of milk products sold for the quantity of SMP(12064.5MTs), Butter(1631.9 MTs) and Ghee(7949.1 MTs) to the tune of Rs. 9244.46 lakhs, 1802.62 lakhs and 8860.09 lakhs respectively. However, the quantity and sale of milk, milk powder (4437.6 mt.), Tetra pac - TM1 Lr. (75058 litre), ice creams (133841 litre), Gulabjamun (1525 kgs.), khova (289452 kgs.), curd (517900 nos.) and Maavin (77026 nos.) had witnessed an increasing trend from Rs.2300.04 lakhs in 2002-03 to Rs.4328.27 lakhs in 2003-04 in the State.

Table - 3 : Milk Products and Value

Year	Tamil Nadu	All India	% share of Tamil Nadu	Per capita availability (gms. per day)	
	(Lakh tonnes)			Tamil Nadu	All India
2001-02	49.88 (1.9)	844 (4.3)	5.9	219 (1.4)	225 (2.3)
2002-03	46.22 (-7.3)	862 (2.1)	5.3	204 (- 6.8)	230 (2.2)
2003-04	47.53 (2.8)	881 (2.2)	5.4	209 (2.5)	231 (0.4)
2004-05	47.84 (0.65)	-	-	210 (0.48)	-

Per capita daily requirement 220 gram.

(Figures in brackets indicates percentage change over the previous year)

*Source: 1. Directorate of Animal Husbandry and Veterinary Services, Chennai-6.
2. Economic Survey 2004 -05.*

Milk Yield:

The **White Revolution** had already taken root in the State due to the holistic approach adopted in animal health care and fodder development. A Pragmatic Breeding Policy was evolved by upscaling crossbred and upgraded animal population. The high milk yield rate was achieved in the State. The average yield rate of milk from exotic and crossbred animals improved from 6.150 kgs. in 2002-03 to 6.177 kgs. in 2003-04 and further to 6.244 kgs. in 2004-05. The yield rate of indigenous cows rose from 2.554 kgs. in 2002-03 to 2.663 kgs. in 2003-04 and further to 2.680 kgs in 2004-05. The milk yield of buffaloes increased to 4.20 kgs. in 2004-05 from 4.125 kgs in 2003-04 and 4.112 kgs. in 2002-03.

Table - 4: Average Yield Rate of Milk (Kgs., / Animal / day)

	Category	2001-02	2002-03	2003-04	2004-05
I.	Cows				
a.	Exotic and Crossbred	6.320 (4.0)	6.150 (- 2.69)	6.177 (0.44)	6.244 (1.08)
b.	Indigenous	2.760 (- 0.1)	2.554 (- 7.46)	2.663 (4.28)	2.680 (0.64)
II.	Buffaloes	4.200 (0.1)	4.112 (-2.09)	4.125 (0.32)	4.200 (1.82)

(Figures in brackets indicate percentage change over the previous year)

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

Veterinary Health Care:
Veterinary Care Infrastructure:

The State has developed animal health care network to cater to the requirements of livestock and poultry population and thereby prevent incidence of morbidity and mortality. With a view to provide animal health care, the institutions like Polyclinics (6 Nos.), Clinician Centres (22 Nos.), Veterinary Hospitals (139 Nos.), Veterinary Dispensaries (1156 Nos.), Mobile Veterinary Units (55 Nos.) and Sub-centres (1799 Nos.) are functioning in the State. Of these institutions, the number of Polyclinics had improved from 3 in 2002-03 to 6 in 2003-04. These institutions are very effective in arresting and controlling contagious diseases like Foot and Mouth, Black quarter, Haemorrhagic septicemia, Anthrax and Ranikhet besides cattle breeding and fodder development. Twelve Frozen Semen Banks, three Frozen Semen Production Stations and 3177 Artificial Insemination Centres are functioning in the State for the production and utilisation of frozen semen straws and increasing the share of crossbred cattle during 2004-05. The State had upgraded 234 Sub-Centres to Veterinary Dispensaries during 2004-05.

Table -5: Animal Care Institutions

		(Numbers)			
Sl.No.	Items	2001-02	2002-03	2003-04	2004-05
I.	Veterinary Health Services				
a.	Polyclinics	3	3	6	6
b.	Clinician Centres	25	25	22	22
c.	Mobile Veterinary Units	54	54	55	55
d.	Mobile Veterinary Dispensaries	382	382	310	-
e.	Veterinary Hospitals	139	139	139	139
f.	Veterinary Dispensaries	849	849	922	1156
g.	Sub-Centres	2123	2123	2032	1799
II.	Animal Disease Intelligence Units	15	15	15	15
III.	Cattle breeding and Fodder Development Units	20	20	20	20
IV.	Institute of Veterinary Preventive Medicine	1	1	1	1
V.	Poultry Disease Diagnostic Laboratory	2	2	2	2
VI.	Artificial Insemination Centres	3572	3572	3569	3177
VII.	Frozen Semen Production Stations	4	4	4	3
VIII.	Frozen Semen Banks	12	12	12	12

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

Animal Health Care:

The State is implementing various livestock development programmes like 'Kalnadai Padhukappu Thittam'. This enabled the livestock rearers to get proper medical facilities at their doorsteps. Special livestock camps are conducted regularly in those areas where veterinary facilities are not sufficient. Number of animals treated had risen from 149.59 lakhs in 2001-02 to 167.21 lakhs in 2002-03. It declined to 164.69 lakh numbers in 2003-04 and rose to 186.15 lakhs in 2004-05. The vaccination and deworming done totaled 426.60 lakhs in 2004-05, 406.86 lakhs in 2003-04 against 380.22 lakhs in 2002-03. That the vaccination alone had increased by 44.50 per cent from 238.22 lakhs in 2003-04 to 344.22 lakhs in 2004-05 is a welcome feature. The veterinary health services like vaccination and deworming and breeding coverage like artificial insemination to livestock were done through various institutions spread throughout the State. The details of animal health care are delineated below.

Table - 6 : Animal Care and Performance Details

(lakh numbers)

Sl.No.	Item	2001-02	2002-03	2003-04	2004-05
1	Animals treated	149.59	167.21	164.69	186.15
2	Vaccination done	258.87	225.78	238.22	344.22
3	Deworming done	154.13	154.44	168.64	82.38
4	Castration done	6.85	6.23	5.88	6.58
5	Artificial Insemination Performed	32.97	32.28	31.02	29.23
6	Calves born	10.51	11.48	11.57	11.09

Source: 1. Directorate of Animal Husbandry and Veterinary Services, Chennai-6.
2. Performance Budget 2005-06.

Meat Production:

The State had established 123 registered slaughter houses and animals like sheep, goats, cattle, buffaloes and pigs are slaughtered in these houses. Total animals slaughtered rose from 23.57 lakhs in 2002-03 to 24.05 lakhs in 2003-04 and to 26.29 lakhs in 2004-05. Sheep and goat had a higher share in total animals slaughtered. Meat production had gone up from 401.20 lakh kgs. in 2003-04 to 466.70 lakh kgs. in 2003-04 and decreased to 425.44 lakh kgs. in 2004-05.

Table - 7: Meat Production

(Lakh Kgs.)

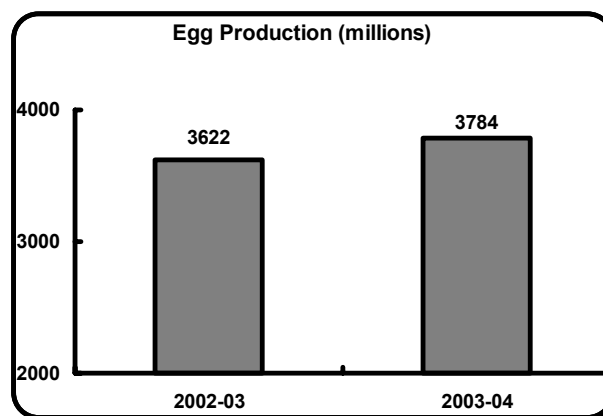
Sl. No.	Item	2001-02	2002-03	2003-04	2004-05
1.	Registered Slaughter Houses (Nos.)	183	182	119	123
2.	Animal Slaughtered (lakhs)				
a.	Sheep	10.22	11.53	11.41	11.29
b.	Goat	8.64	10.13	10.85	13.67
c.	Cattle	0.97	0.86	0.95	0.71
d.	Buffaloes	0.92	0.72	0.71	0.50
e.	Pig	0.47	0.33	0.13	0.13
	Total	21.22	23.57	24.05	26.29
3.	Meat Production (lakh kgs.)				
a.	Mutton	100.09	121.01	137.62	123.50
b.	Chevon	89.33	111.65	127.71	166.34
c.	Beef	86.43	77.21	104.69	72.14
d.	Cara Beef	86.66	71.88	89.95	58.70
e.	Pork	28.72	19.45	6.73	4.76
	Total	391.23	401.20	466.70	425.44

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

Poultry Development and Egg Production:

The State occupied second position in egg production at the national level. Poultry rearing has been an important source of livelihood and income generation particularly for the marginal farmers, landless and socially backward. Poultry is a key activity in the districts like Namakkal, Salem, Erode and Coimbatore in the State. The State had set up 24 Poultry Extension Centres apart from two chick hatcheries, one at Kattupakkam in Kancheepuram district and other at Hosur in Krishnagiri district and supplied chicks to farmers. Besides, a turkey-rearing unit has been established at the Poultry Farm, Kattupakkam.

In order to provide good quality meat and egg to the public, the Department is conducting a State-wide fortnight vaccination programme against Ranikhet disease during the month of February every year plus during the camps conducted under 'Kalnadai Padhukappu Thittam' in the State. The number of poultry vaccinated under Special Ranikhet Vaccination Camps stood at 36.18 lakhs in 2003-04 and at 30.00 lakhs in 2004-05. The egg production has soared from 36223.56



lakhs in 2002-03 to 37835.83 lakhs in 2003-04 and further to 63947.65 lakhs in 2004-05. The percentage of increase was 4.45 for 2003-04 and 69.01 for 2004-05. The per capita availability of egg had improved from 58 in 2002-03 to 61 in 2003-04 and further to 102 in 2004-05 against the required level of 183. Thanks to supply of eggs in the Noon Meal Centres, there is a huge demand for egg production in the State.

Animal Feed and Fodder Development:

Availability of quality animal feed and fodder influences dairying. In the development process, availability of land for fodder production is often a problem. The total grazing lands including culturable waste and permanent pastures available in the State constituted only 1.13 lakh hectares (0.91%). However, the total per year requirement of dry and green fodder for the bovine population stood at 157.67 lakh MT and 591.27 lakh MT respectively.

Wasteland Development Programme which is being implemented in Salem, Namakkal, Vellore, Theni, Thanjavur, Dindigul, Tirunelveli, Thiruvannamalai, Ramanathapuram and Thiruchirappalli districts, apart from the three Cattle Feed Centres at Madhavaram, Kappalur and Erode set up by the Tamil Nadu Cooperative Milk Producer's Federation in the State caters to fodder production. 7 Fodder Seed Production Units are functioning at Padappai, Eachenkottai, Chettinad, Hosur, Chinnasalem, Abisekhapatti and Pudukottai for improving the fodder production.

In addition, the State had taken up fodder development activities such as community feed and fodder banks with the help of Self Help Groups, cultivation of perennial high yielding fodder grass like Napier, hybrid Co₁, Co₃, para grass, Guinea grass and cow pea, stylosanthus, Co₃ grass in coconut, mango grooves as inter crop, distribution and cultivation of fodder seed minikits at free of cost, subabul seedlings (rich in protein), aloes in Veterinary Institutions were taken up in the State. However, the total area under fodder cultivation had come down from 3472 acres in 2002-03 to 3452 acres in 2003-04. However, the total area under the fodder production stood at 3450 acres during 2004-05. Among the production and distribution of slips, seeds and seedlings, slips accounted for a major share. It went up by 0.7 per cent and seedlings by 45.5 per cent during 2003-04. The drought that occurred for third year in succession in the State led to shortage of fodder which was acute. However, the minikits distribution had improved from 10000 numbers in 2003-04 to 10900 numbers in 2004-05.

Table - 8: Achievement in Fodder Production

Sl.No.	Particulars	2001-02	2002-03	2003-04	2004-05
1.	Total area under cultivation (acres)	3454	3472	3452	3450
2.	Fodder Seed Production Units (Nos.)	7	7	7	7
3.	Production of				
	- Slips (lakhs)	116.18	117.20	118.00	70.10
	- Seeds (kgs.)	12500	13500	57.20	10.00
	- Seedlings (lakh)	1.00	1.10	1.60	0.80
4.	Minikits Distributed(Nos)	7050	6975	10000	10900

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

Fisheries:

Tamil Nadu is one of the prominent maritime States with rich potential in fisheries. The State has a coastal line of 1076 km. sharing 13.4 per cent at National level and a continental shelf of about 41412 sq.kms. The State possesses 0.19 million sq.km. of Exclusive Economic Zone (EEZ) accounting for 9.7 per cent of All-India EEZ. Fishing is a traditional occupation. Fish provides protein-rich diet to the people and plays a vital role in improving dietary standards. An extent of 56000 ha. of brackish water area available for aquaculture production of which 4455 ha. (8.0%) are under aquaculture in the State. Besides this, the fisheries sector provides employment opportunities to the coastal people and earns export earnings. The increase in demand has led to focus on productivity.

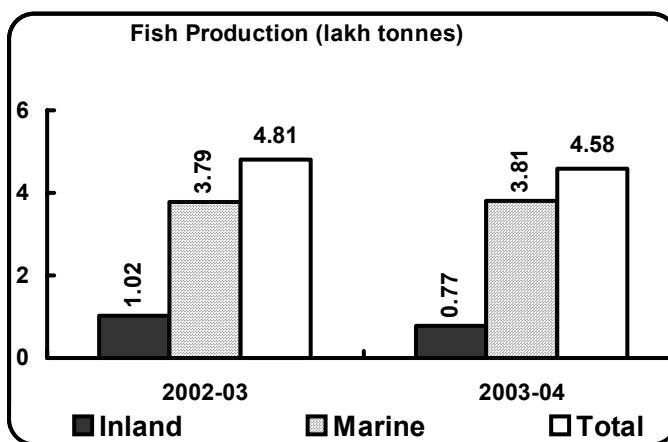
Apart from marine fishing, the State is also endowed with inland fishing potential to the tune of about 3.7 lakh ha. of water spread area comprising reservoirs, major irrigation and long seasonal tanks, short seasonal and ponds, estuaries and backwaters. Utilising the available potential is being assigned priority.

Fish Production:

Due to urbanisation and increasing population, there is an increasing demand for sea food. The State has introduced Fisheries

Development Mission at Ramanathapuram district as a 15-Point Programme during 2002-03. It mainly focuses on the production of both marine and inland fish through innovative and scientific

methods in reservoirs, tanks and ponds. The overall fish production in the State had come down by 4.8 per cent from 4.81 lakh tonnes in 2002-03 to 4.58 lakh tonnes in 2003-04. The share of marine and inland fish catch put together accounted for 8.0 percent of total National production in 2002-03.

**Table - 9 : Fish Production**

(Lakh Tonnes)

Year	Inland	% Change	Marine	% Change	Total	% Change
2001-2002	1.14	3.6	3.74	0.5	4.88	1.2
2002-2003	1.02	(-) 10.5	3.79	1.3	4.81	(-) 1.4
2003-2004	0.77	(-) 24.5	3.81	0.5	4.58	(-) 4.8

Source: Commissioner of Fisheries, Chennai-6.

Marine Fish Production:

The marine fish production through mechanised and non-mechanised boats had improved marginally by 0.5 per cent from 3.79 lakh tonnes in 2002-03 to 3.81 lakh tonnes in 2003-04. The total number of boats engaged in fishing operation decreased from 68036 in 2002-03 to 66684 in 2003-04. In marine fisheries, problems of over fishing, issues like crossing of international boundaries etc. are being addressed.

Table - 10 : Marine Fish Catches by Boats

Year	Boats in operation (number)			Fish catches through (tonnes)		
	Mecha-nised	Non-mechanised	Total	Mecha-nised	Non-mechanised	Total
2001-2002	11444	53844	65288	187142	186719	373861
2002-2003	11889	56147	68036	200468	178746	379214
2003-2004	11969	54715	66684	204432	176716	381148

Source: Commissioner of Fisheries, Chennai-6.

Tsunami of 26th December 2004, visually crippled the economy of coastal districts; impact being severe in the districts of Nagapattinam, Cuddalore, Kanniyakumari, Kancheepuram, Villupuram and Chennai. Thousands of boats, catamarans and fishing nets were destroyed (26112 wooden catamaran, 3402 RRP catamaran, 4170 Vallams, 2391 mechanised boats and 38177 fishing nets). There was extensive damaged to fishing harbours, fish landing centres and trading centres. Almost all the aquaculture farms were destroyed. Due to the damages cause to other infrastructure. Fishing and related activities came to a stand still for almost three months after tsunami. Even though restoration activities had been swiftly undertaken, tsunami had impacted the coastal economy considerably. Loss of marine fish production due to tsunami during 2004-05 is provisionally estimated at not less than 25 per cent of the normal production.

Inland Fish Production:

In order to step up inland fish production Fish Farmers Development Agency has been in operation in the State since 1976. There were 12 Fish Farmers Development Agencies in 2003-04. They develop scientific cultural practices in inland water fisheries. The quantum of inland fish production is a function of number of fish ponds / tanks and availability of water and size of investment. There are 1061 major reservoirs, 34734 major irrigation tanks, 39283 seasonal tanks etc. Total catch by the source reveals that seasonal tanks and major irrigation tanks alone accounted for 83 per cent of total inland fish production of 77307 tonnes in 2003-04. Inland fish production in the recent past had witnessed a declining trend. It declined from 102217 tonne in 2002-03 to 77304 tonnes in 2003-04. The fall in production is due to failure of monsoon and drying up of irrigation sources in three consecutive years.

The Inland Fishery focuses on augmenting the fish production by utilising the available inland water resources such as reservoirs, major and minor irrigation tanks, village ponds and tanks etc. The reservoir fisheries management is being undertaken in 44 reservoirs in the State by the Department and in eight reservoirs by the Tamil Nadu Fisheries Development Corporation. The Department has also taken over 32,000 ha. of major and minor irrigation tanks for stocking carp seeds and exploiting with the help of local fishermen.

Table -11: Inland Fish Production : By Source

(In tonnes)

Sl.No.	Sources	2001-02	2002-03	2003-04
1.	Major Reservoirs	973	1095	879
2.	Major Irrigation Tanks (both perennial and long seasonal)	36182	34734	195
3.	Seasonal Tanks	42688	39283	64822
4.	Estuaries and backwaters	8591	7500	2800
5.	Fish Farmers Development Agencies	3814	1686	2213
6.	Rivers, Streams, Canals and other Water sources	11812	8500	-
7.	Miscellaneous (Rice fields, Swamps etc.)	9631	9419	6404
	Total	113691	102217	77304

Source: Commissioner of Fisheries, Chennai-6.

Export of Fish:

Tamil Nadu is one of the major fish exporting States in India. The fish products are mostly exported through Chennai and Thoothukudi ports in the State. Marine fish export fetch good export earnings to the State. The total quantity of fish and fish products exported had come down by 2.4 per cent from 70147 tonnes in 2002-03 to 68462 tonnes in 2003-04. The State's share in fish export stood at 17 per cent at the national level (412017 tonnes). The value of total quantity exported worked out to 33.99 per cent of the all India export value.

Table - 12 : Export of Fish and Fish Products

Year	Tamil Nadu		All-India	
	Quantity (Tonnes)	Value (Rs. in Lakhs)	Quantity (Tonnes)	Value (Rs. in Lakhs)
2001-2002	58482	201640	424470	595705
2002-2003	70147	250787	467297	688131
2003-2004	68462	207116	412017	609195

Source: Commissioner of Fisheries, Chennai-6.

Other Development Initiatives:

Apart from the above activities, the State is implementing certain schemes for the health and wealth of fishery sector such as Fishermen Sea Safety Scheme, Fishermen Free Housing Scheme, National Fishermen Savings-cum-Relief Scheme, Group Accident Insurance Scheme for Fishermen and the Project like Integrated Marine Fisheries Development Project Phase I and II etc. The Phase II of Integrated Marine Fisheries Development Project was kick-started in 1.4.1998 in 13 coastal districts in Tamil Nadu and planned to distribute 3565 fishing inputs to 100 villages to a tune of Rs.4506 lakhs in the State. The Tamil Nadu State Apex Fisheries Co-operative Federation Limited (TAFCOFED) started functioning from 6.11.1991 in Chennai as a Headquarters. At present, 580 Primary Fishermen Co-operative Societies and nine District Fishermen Co-operative Federation had become members in Tamil Nadu State Apex Fisheries Co-operative Federation Ltd (TAFCOFED) and paid a share capital of Rs.89.09 lakhs.

Sustainable Fish Development:

In order to facilitate sustainability, the Government of India has imposed a 45-days ban on fish catching during summer season in notified areas in the sea with a view to arresting over-exploitation of fish. This policy contributes towards improved breeding of fish and ensuring sustainable development of fish population. The Supreme Court of India

mandated that all the aqua farmers in the coastal areas should obtain approval from Aquacultural Authorities of India. Aqua-farming is to be carried out beyond 500 metres from the high tide of the sea. This move is to regulate pisciculture in the Coastal Regulation Zone. The potential shrimp farming area consists of 56000 ha. in the State. As on March 2005, 2086 shrimp farms are functioning in 12 coastal districts (except Chennai) of the State. Of these, 883 shrimp farms had got approval from the Aquaculture Authority. The coastal aquaculture had become a thrust area under Fisheries Development Mission in the State. It is proposed to develop 1000 ha. of coastal saline land every year under aquaculture utilising low intensive traditional and improved traditional shrimp farming practices by utilising the support of other agencies like Marine Product Export Development Agency (MPEDA) in the State. During the past three years (i.e. from 2002) aquaculture farming has been under taken over an area of about 3100 ha. in the State with the approval of Aquaculture Authority

Forestry:

Forest plays a vital role in safeguarding the environment and contributes much to economic development. Forests are generally considered *environmental capital* in that it directly relates to the environment. Conservation and preservation of forest is a pre-requisite for maintaining a healthy eco-system. Besides ensuring ecological stability, forest provides employment opportunities to rural and tribal folk and provides wood and minor forest products like honey, herbs, fruits, berries and materials for domestic use.

The total forest land consists of 22877 sq.kms. which constituted 17.59 per cent of the geographical area as against 33.3 per cent recommended by National Forest Policy, 1988 and 22 per cent obtaining for All India. As per the recommendation of the Union Planning Commission and the National Forest Policy, forest cover should be increased from the current level of 17.59 to 25 per cent by 2007 and 33.3 per cent by 2012. As a result of population increase and thereby biotic and abiotic pressure on forest land, nearly half of the forest area is prone to heavy degradation in the State. Therefore, the biological upgradation and ecological restoration of these degraded forest land is being attempted through Joint Forest Management (JFM) for the sustained accrual of benefits to the people in the State in general and women-folk in particular.

Towards achieving sustainable development, the government has unveiled a comprehensive Forest Policy. Based on the National Forest Policy 1988, the State Forest Policy has formulated the following objectives sought to be achieved:

- Increasing substantially the forest tree cover in the State;
- Ensuring environmental stability and restoration of ecological balance;
- Conservation of bio-diversity for the benefits of present and future generations;
- Mitigating floods and droughts and also retarding siltation of reservoirs by checking soil erosion and denudation in catchment areas of rivers, lakes and reservoirs;
- Meeting the genuine requirement of fuel, fodder, non-wood forest produce and small timber to the extent possible on a sustainable basis (through joint Forest Management);
- Extension of improved forest technology to farmers outside the Reserved Forests;
- Improving the habitat for all living beings including micro organism, insects, birds and animals and
- Making available the traditional forest produce to be used rightfully by the tribal people living inside forests.

Recorded Forest Area:

The recorded forest area works out to 17.59 per cent of total geographic area of 130058 sq.km.

- Geographic area : 130059 sq.km.
- Reserved forest : 19388 sq.km.
- Protected forest : 2183 sq.km.
- Unclassed forest : 1306 sq.km.
- Recorded forest : 22871 sq.km.

The total forest cover is 21482 sq.km.. Forest and Tree cover area is 27536 sq. km. as per the 2001 Cences.

Table - 13 : Assessment of Forest Cover

(In sq.km.)

Type	1999		2001	
	India	Tamil Nadu	India	Tamil Nadu
Dense	382229	8680	390564	12007
Open	255064	8398	287769	10636
Total	637293	17078	678333	22643

Source: State of Forest Report,2003 (SPC)

Forests are categorised into the following: Conservation Forest, Social Forest, Production Forest and Development Forest. The quality and productivity of forest is influenced by a host of factors such as type of soil, type of species raised, survival rate, silvicultural practices, protection and social fencing, absence of biotic and abiotic interference, adequacy and assuring of precipitation, richness of canopy, etc.

Currently, the significance of shelter belt plantations and mangrove plantations along the coastal areas is being highlighted. Mangroves are salt-tolerant eco-systems found mainly in the tropical and subtropical inter-tidal regions of the world. Pitchawaram in Cuddalore district harbours some of the best mangroves in the world. The experience of mangroves smothering the impact of Tsunami has been recognised and is being actively propagated in the post tsunami rehabilitation programme.

Revenue from Forestry:

The revenue flows consist of sale proceeds of timber and other forest products, receipts from social and farm forestry and other receipts. Of these, the sale of timber and other forest products alone accounted for 80 per cent (125.91 crores) of the total revenue receipts of Rs.157.93 crores in 2002-03. Total revenue had sharply shrunk from Rs.157.93 crores in 2002-03 to Rs.91.39 crores in 2003-04, the decline being 42 per cent.

Table - 14 : Revenue from Forestry

(Rs. in crores)

Sl.No.	Item	2002-03	2003-04
1.	Sale of timber and other Forest products	125.91	46.19
2.	Receipts from Social and Farm forestry	13.31	17.68
3.	Other receipts	18.71	27.52
	Total	157.93	91.39

Source: Office of the Principal Chief Conservator of Forests, Chennai-15.

Expenditure on Forestry:

Expenditure on forestry sector during Five Year Plans showed a rise. The expenditure rose from Rs.30.43 lakhs in First plan (1951-56) to Rs.1198.33 lakhs in the Fifth Plan period (1974-78) and further to Rs.12978.00 lakhs in the X Five Year Plan. However, area covered seems to be significant, i.e., save 4.15 lakh ha. during the Ninth Five Year Plan. This lays emphasis on infusion of more fund allocation in future planning and adoption of pragmatic silvicultural practices.

Table - 15 : Trends in Expenditure on Forestry and Area Covered

Plan Period	Year	Plan Exp. (Rs. in lakhs)	Area Covered (Lakh Ha)
I Plan	1951-56	30.43	0.15
II Plan	1956-61	147.00	0.78
III Plan	1961-66	372.14	0.76
Post III Plan	1966-69	279.99	0.39
IV Plan	1969-74	574.71	0.68
V Plan	1974-78	1198.33	1.09
Post V Plan	1978-80	516.13	0.41
VI Plan	1980-85	5700.00	2.13
VII Plan	1985-90	11189.00	1.80
Post VII Plan	1990-92	8504.00	0.85
VIII Plan	1992-97	28364.00	2.77
IX Plan	1997-2002	60312.00	4.15
X Plan	2002-2007	12280.16	0.37
	(2002-03)	12874.34	0.49
	(2003-04)		

Source: Office of the Principal Chief Conservator of Forests, Chennai-15.

Forestry and wild life alone shares 92 per cent of the total expenditure on Forestry during 2003-04. The total expenditure on forestry sector had increased from Rs.18755.57 lakhs in 2002-03 to Rs.19665.11 lakhs in 2003-04 and further rose to 20220.74 lakhs in 2004-05. The revised estimated expenditure during 2003-04 was at RS.19665.11 lakhs.

Table - 16 : Expenditure on Forestry : By Activity

(Rs. in Lakhs)

Sl. No.	Activity	2002-03 (Accounts)	2003-04 (Accounts)	2004-05 (R.E.)
1.	Welfare of SC/ST & BC population	111.46	124.89	115.66
2.	Soil and Water Conservation	170.11	173.92	184.16
3.	Social Security	2.98	15.29	3.35
4.	Forestry and Wildlife	17326.28	18005.95	18945.91
5.	Plantations	0.99	1.13	1.17
6.	Forest Research and Education	68.82	71.89	66.66
7.	Hill Area Development	749.17	771.38	790.04
8.	Ecology and Environment	312.01	290.65	199.45
9.	Public Works	13.75	9.82	14.00
	Total	18755.57	19464.92	20220.74

Source: Office of the Principal Chief Conservator of Forests, Chennai-15.

The State has 32 river systems, 11 major reservoirs, 2679 canals and 38863 tanks and majority of the catchment areas lie in forest lands. Programmes are being implemented in the State with Afforestation and soil and water conservation measures in the selected watersheds to improve fertility of the land.

The main objective of the Forest Development Scheme is to augment the permanent green cover and rope in peoples' participation, especially, to ensure preservation, protection and development of ecological condition through afforestation and soil conservation in the

State. The main activities such as conservation and restoration of evergreen sholas, tribal welfare, wild life conservation, eco-tourism and establishment of Gene pool garden are carried out under the Scheme. A total outlay of Rs 439.68 lakhs was earmarked for this scheme during 2003-04. This scheme mainly focuses on improving the habitat for all living beings including micro organism, insects, birds and animals and making available the traditional forest produce to be used by the tribal people living inside the forests.

Special Area Programmes:

Major Schemes like Tamil Nadu Afforestation Project (TAP), Hill Area Development Programme (HADP), Western Ghats Development Programme (WGDP), National Afforestation Programme are being implemented in the State.

Tamil Nadu Afforestation Project (TAP):

This project is being implemented with the financial assistance from Japan Bank spread over a period of five years since 1997-98 in the State with a total cost of Rs.499.20 crores. Of which, a sum of Rs.445.99 crores was spent upto 31.3.2002. However, this project continued in 2002-03 and 2003-04 at a cost of Rs.177.41 crores, following escalation of value of Japanese Yen over its then rupee value. This scheme is being implemented at a cost of Rs.66.92 crores during 2004-05 to cover 22725 ha. spread over 110 villages with the involvement of local people in the State. Restoration of degraded forest lands, adequate maintenance of already planted areas, nursing fringe forest villages and tribal villages adjacent to forests, etc. are some of the highlights of the TAP.

Hill Area Development Programme:

The Hill Area Development Programme has been in implementation in the Nilgiris district since 1975-76. This programme is mainly focusing on upgradation of ecological balance in the Nilgiris district. The Nilgiris district is well known for its rich heritage of flora and fauna. The main objective of this scheme is to enlarge the permanent green cover, involve people's participation, especially, to ensure preservation, protection and development of ecological condition through afforestation and soil conservation in the State. This scheme had been implemented at a cost of Rs.314.79 lakhs during 2003-04 and at Rs.375.17 lakhs (RE) during 2004-05.

Western Ghats Development Programme:

This scheme is being implemented as a Centrally-Sponsored Programme since 1975-76 in Western Ghat areas in the State spread over 33 taluks in eight districts. It aims at preservation, eco-restoration and bio-diversity of forests with enriched flora and fauna of Western Ghats. The Western Ghats shares 5596 sq.kms out of the State's total forest area of 22877 sq.km. in the State. This scheme was implemented at a cost of Rs.381.22 lakhs during 2003-04. An amount of Rs.35.00 lakhs had been spent towards conservation and development of medicinal plants on priority watershed basis in Western Ghats regions during 2003-04 and at 38.60 lakhs during 2004-05. This scheme is continued and is being implemented at a cost of Rs.386.28 lakhs during 2004-05 in the State.

National Afforestation Programme:

The Government of India-funded afforestation schemes are being implemented in the State from 2002-03 to 2006-07. It has been carried out through forest development agencies on joint forest management basis. To generate rural employment and development, the Government of India have contemplated Forest Development Agency concept with interlink approaches under a single umbrella scheme named as National Afforestation Programme. The State Forest Department had sent a proposal to form 31 Forest Development Agencies (FDAs) by covering territorial and wild life divisions. The Scheme is being implemented in 31 divisions at a total outlay of Rs.8660.53 lakhs till 2006-07 covering an area of 51627 ha., in 1073 villages. So far, Rs.3940.23 lakhs has been utilised towards afforestation works carried out over an area of 25167 ha.

The Forestry Sector is critical in terms of its influence of ecological sustainability, environmental stability, provision of raw-materials. Keeping this in mind, the concept of Joint Forest Management is being advocated by involving the stake-holders in Forest Management.