

CHAPTER 6

AGRICULTURE & ALLIED SECTORS

6.1 Agriculture

Development in agriculture in these Islands started mainly during the 7th Five Year Plan. Paddy is the principal food crop grown in this Territory; it accounted 61% of the total crop area in 1955-56. In non food crops, coconut contributed around 42.83% of the total cropped area. The major crops grown are paddy, coconut, arecanut, vegetable and fruits. The production of pulses and oil seeds is insignificant.

Land holding pattern

The knowledge of detailed structure and characteristics of agriculture holdings is imperative for effective and efficient planning and its implementation for agriculture development. As per Agriculture Census 2000-01 the Union Territory of Andaman and Nicobar Islands has a total of 11349 agriculture holdings. This includes 9444 individual holdings 1783 joint holdings and 122 institutional holdings.

The total area operated by all social groups in Andaman and Nicobar Islands declined by 14.64% from 26578 holdings during 1990-91 to 22688 ha. during 2000-01. During the same period the area operated by marginal and small holdings increased by 55.37% and 7.54% and area operated by semi medium, medium and large holdings declined by 0.83%, 18.90% and 59% respectively. The number of holdings increased in case of marginal holdings and small medium holdings where as it has shown a decline in case of semi-medium, medium and large holdings during the period. The comparative statistics on number of operational holdings and area of operated holdings is given below :

Statement 6.1.1

Category	No. of holdings			Operational area		
	1990-1991	1995-1996	2000-2001	1990-91	1995-1996	2000-2001
Marginal holdings	2441	2475	3656	921	987	1431
Small holdings	2425	2255	2686	3435	3148	3694
Semi medium holdings	3370	3211	3254	8293	8075	8224
Medium holdings	2112	2075	1711	9092	8888	7374
Large holdings	66	54	42	4787	1935	1965
Total	10414	10070	11349	26528	23033	22688

Average size of holdings

The average size of holdings has decreased from 2.55 ha. during 1990-91 to 2.00 ha. in 2000-01. Major difference was found in the size class of large holdings which was 72.53 ha. in 1990-91, 35.83 ha. in 1995-96 and 46.79 ha. in 2000-01.

Statement 6.1.2

(area in ha.)

S.No.	Category	1990-01	1995-96	2000-01
1.	Marginal holdings	0.37	0.40	0.39
2.	Small holdings	1.42	1.40	1.38
3.	Semi medium holdings	2.46	2.51	2.53
4.	Medium holdings	4.30	4.28	4.31
5.	Large holdings	72.53	35.83	46.79
	Average size	2.55	2.29	2.00

Land Utilization

Out of the geographical area of 8249 sq km, around 90% is covered under forest including deemed forest and area under agriculture accounts to 6 % of the total area i.e . 50,000 ha's approximately. Of which 12000 ha. (Flat land) was under paddy and other field crops and 38000 ha.(Hilly land) was under plantation and other crops. This was the scenario before Tsunami. Due to Tsunami which occurred on 26th December 2004, extensive damage was caused

to Agriculture land. 8068.71 ha is assessed to be damaged by Tsunami/ Earth Quake .Out of which 4206.64 ha is under permanent submergence.

Table 6.1.3
Land utilization pattern during 2006-07

Crop	Area (Ha.)
Paddy and other field crop	9186
Coconut	21416
Arecanut	4056
Cashew	570
Red oil Palm	1593
Rubber	1500
Fruits	2950
Spices	1611
Fallow Land	461
Reclaimable area	2451
Total	45794
Permanently submerged land	4206
Total area under agriculture	50000

Crop Intensity

Statement showing the crop intensity in Andaman and Nicobar Island for the last five years.

Statement 6.1.4

Year	Net area sown	Gross cropped area	Cropping
2003-04	12000	16473.00	137
2004-05	12000	17620.00	147
2005-06	7000	9351.62	133
2006-07	7000	12571.00	179
2007-08	9000	13797.00	153

Cropping pattern

Paddy is the main crops during Kharif season covering an area of 9000 ha Besides paddy common tropical vegetables are cultivated throughout the year both in Kharif & Rabi. During Rabi Pulses, oilseeds are also grown in the rice fallows.

Rice based cropping system

The geographical situation and Agro climatic condition of A&N Islands are quite conducive for rice based farming system, Generally mono cropping of rice is in practice followed by pulses/ oilseeds and vegetables during Rabi season.

Coconut based cropping systems

Coconut occupies more than 50% of the total cultivable area. It occupies prime position in the social & economic lives of the people as it is the main source of income and livelihood support of the farming community. Coconut is intercropped with spices like black pepper, clove, cinnamon nutmeg & ginger. Fruits such as pineapple, papaya, banana, jack fruit Mango and sapota followed by roots crops like tapioca, colocasia etc.

Arecanut based cropping system

Like coconut arecanut is also one of the main plantation crop of A&N Islands.

Arecanut + Spices

Arecanut + Fruits

Arecanut + Betel vine

Irrigation

Lack of water and irrigation facilities has limited the agricultural activities in these Islands to Kharif season only. In order to enhance cultivation during the Rabi Season and to increase the productivity and production of crops, National Watershed Development Project for Rainfed Areas have been taken up. The main source of irrigation is through RCC wells, ponds, check dams etc.

Statement 6.1.5

Source wise irrigated area for the last five years

Sl. No.	Type of Source	Irrigated area (in ha)				
		2003-04	2004-05	2005-06	2006-07	2007-08
1.	Pond	274.2	265.80	306.60	351.90	409.20

2.	Nallah/Stream	1077.60	1087.10	1087.10	980.50	985.50
3.	RCC Well	2.10	2.10	2.10	50.70	116.70
	Total	1353.9	1355	1395.8	1383.10	1511.40

Minor irrigation

APWD executes the construction of Minor Irrigation projects. An Executive Engineer is on deputation to APWD from Central Water Commission, New Delhi to deliver the specific and specialized needs in the sector. A number of minor irrigation schemes have been identified by APWD, two of which have been completed and few others are being taken up.

The following schemes have recently been completed:

- (i) Vishnu Nallah Scheme in Little Andaman.
- (ii) RK Pur scheme in Little Andaman.

Other main Minor Irrigation schemes under active consideration are:

- (i) Korang Nallah in Middle Andaman.
- (ii) Prem Bahadur Nallah in Great Nicobar Islands.
- (iii) Swaroop Nallah in Great Nicobar Islands.
- (iv) Mithakhari Nallah scheme in South Andaman.

Anti sea erosion measures

The coast line of A & N Islands is about 1962 km. Under the anti sea erosion scheme about 800 m of sea wall was constructed during the 8th plan and 3950 m of cement concrete sea wall was constructed during 9th plan. In the 10th plan about 12250 m of sea wall was proposed to be constructed out of which 7600 m has been completed.

Statement 6.1.6

Rainfall data for the last five years

(in mm) from the year 2003 to 2007

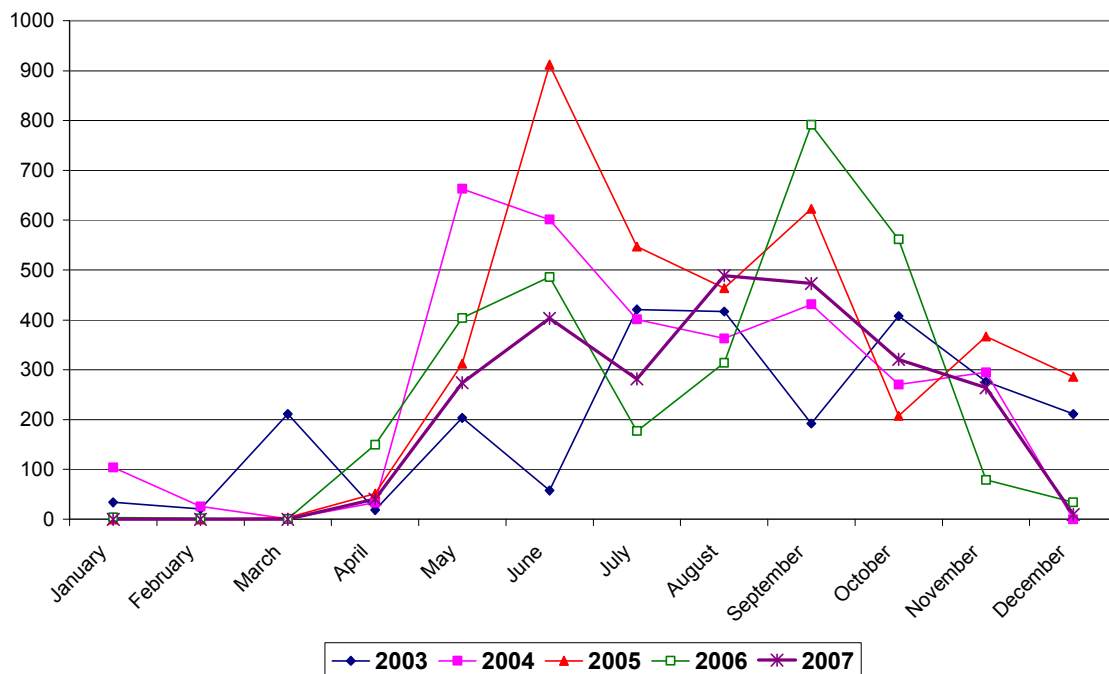
S.No	Month	2003	2004	2005	2006	2007
1.	January	34.00	104.2	0.0	3.6	0.0
2.	February	20.60	25.9	0.0	1.9	0.0
3.	March	211.40	1.0	3.4	0.9	0.0

4.	April	18.80	33.7	51.9	149.9	40.7
5.	May	203.50	662.8	312.4	403.8	274.2
6.	June	57.70	601.3	912.2	486.2	402.9
7.	July	421.00	401.0	547.1	177.3	281.6
8.	August	416.80	362.9	463.7	314.1	489.1
9.	September	192.00	431.0	622.9	791.7	473.2
10.	October	408.00	270.3	207.5	561.4	320.9
11.	November	276.40	294.6	366.7	79.0	263.8
12.	December	211.50	00.0	286.0	34.4	9.6
	Total	2471.70	3188.7	3773.8	3004.2	2556.0

Based on Meteorological Statistics of Andaman and Nicobar Islands-2007
 – Published by Directorate of Economics & Statistics, A&N Administration, Port Blair.

Chart 6.1.1

Rainfall Data for the last five years



6.2 Veterinary & Animal Husbandry

Animal Husbandry is an important component of Agriculture Sector. Cattle, Buffaloes, Goats and Pigs are the important Livestock in these Islands.

The growth rate of selected categories of animals as per the Quinquennial Census 1997, 2003 & 2007 is indicated in the following statement. The Growth

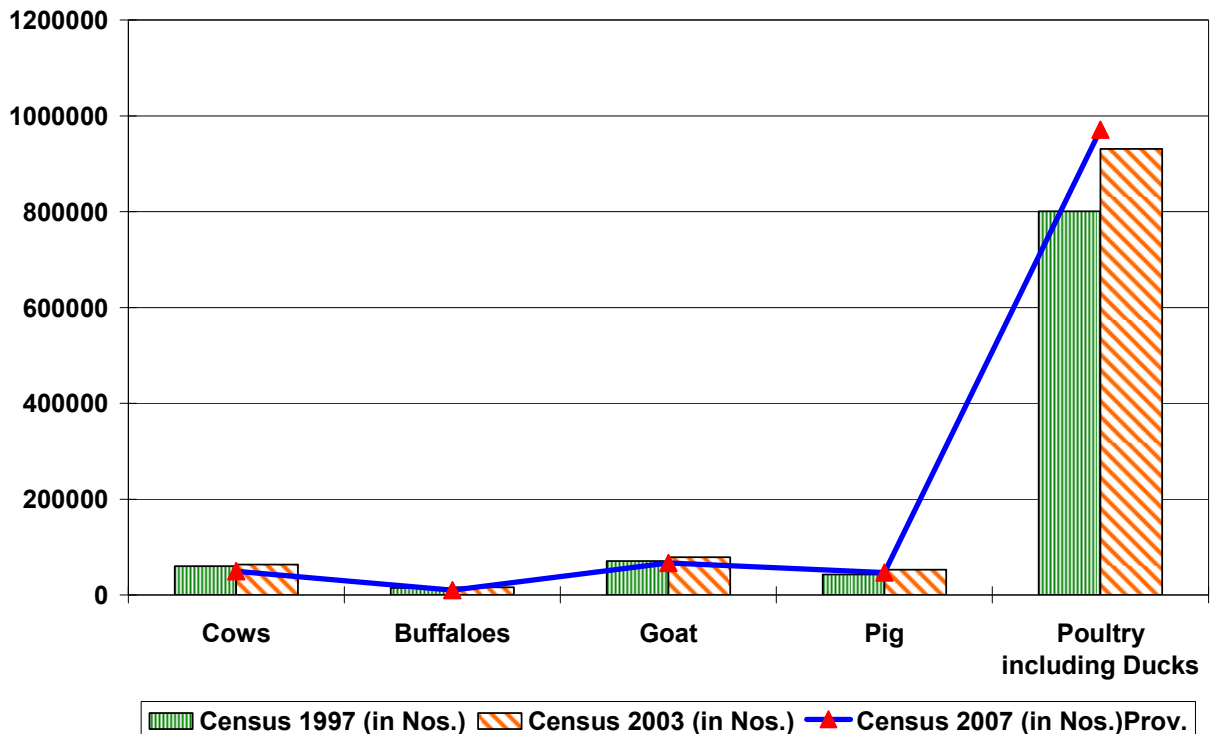
rate of Cattle, Buffalo, Goat & Pig has decreased from 17th Quinquennial census due to loss of livestock during Tsunami which struck these islands on 26.12.2004.

Statement 6.2.1
Livestock Census Data

Sl.No	LIVESTOCK	(Census 1997) (in nos)	(Census 2003) (in nos)	% of Growth rate over previous census	(Census 2007) (in nos) (prov.)	% of Growth rate over previous census
1	Cows	60180	63554	5.61	49369	-22.32
2	Buffaloes	14204	16211	14.13	10195	-37.11
3	Goat	70923	79219	11.70	66550	-15.99
4	Pig	42836	52201	21.86	47061	-9.85
5	Poultry including Ducks	800950	930878	16.22	971335	4.35

Chart 6.2.1

Livestock Census Data



Livestock Products

The main Livestock Products are Milk, Eggs and Meat. The estimated production of livestock products during the period 2001-02 to 2007-08 is presented in the following statement:

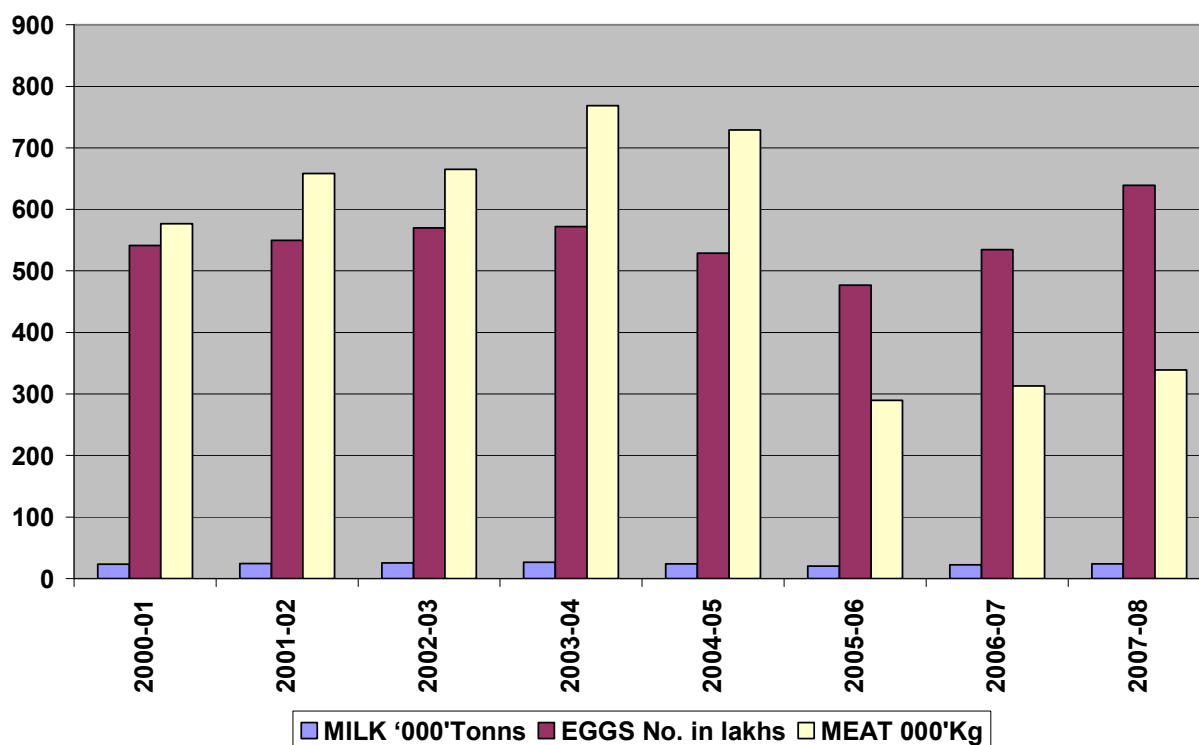
Statement 6.2.2

Livestock Production

S.NO	ITEM	UNIT	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
1	MILK	'000'Tonns	23.180	24.360	25.510	26.420	24.040	20.230	22.580	23.890
2	EGGS	No. in lakhs	541.220	549.780	569.910	572.070	529.000	476.990	534.950	638.940
3	MEAT	'000'Kg	576.526	658.303	665.078	768.788	729.167	289.584	313.050	338.840

Chart 6.2.2

Livestock Production



The production of milk has increased from 23.18 thousand tonnes in 2000-01 to 26.42 thousand tonnes in 2003-04 registering a growth rate of 13.97% during the period of four years. The milk & egg production has decreased from 2004-05 onwards due to loss of 3,786 number Cattle, 16,623 numbers Goats and 98,722 poultry during Tsunami of December 2004.

To keep livestock and poultry healthy and also to protect them from deadly epidemic diseases, the department has a network of Veterinary Services such as hospitals, dispensaries etc. through out the Islands. The number of Veterinary Hospitals & Dispensaries in A & N Islands is 9 & 11 respectively. The number of animals provided treatment from the Govt. Hospitals /Dispensaries from 2000-01 to 2007-08 are indicated in the table given below.

Statement 6.2.3

VETERINARY SERVICES IN ANDAMAN AND NICOBAR ISLANDS

S.NO.	ITEM	UNIT	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
1	Veterinary Hospitals	No.	9	9	9	9	9	9	9	9
2	Veterinary Dispensaries	No.	11	11	11	11	11	11	11	11
3	Animals treated	No.	209728	200032	199869	219883	264537	212255	334060	235935
4	Private Clinic	No.								
5	Veterinary Polyclinic/ Diagnostic Lab	No.	1	1	1	1	1	1	1	1

6.3 FISHERIES

Andaman and Nicobar Islands have a coastline of 1962 km with the Exclusive Economic Zone of 6.00 lakhs sq km accounting for 30% of the total EEZ of the country (20.20 lakh sq km). In view of the geographical nature, the continental shelf of the islands is narrow, which is about 35,000 sq km

forming 6.83% of the shelf area of the country (5.12 lakh sq km). The estimated annual fishery potential of Andaman and Nicobar Islands is 1.48 lakh tonnes constituting about 3.8% of the fishery potential of the country (39 lakh tonnes).

The fishery potential of the Islands is hardly exploited with the present level of catch of only 28,000 tonnes (18.92%). It has been estimated that the Tuna fishery resources alone account for 44% (64,500 tonnes) of the total fishery resource of the islands (1.48 lakh tones).

As there is a wide gap between the level of exploitation and the estimated fishery potential, fishery has been identified as a priority sector for socio-economic development of the islands.

Marine Fishing Policy, 2004:

The Comprehensive Marine Fishing Policy, 2004 of the Ministry of Agriculture, Govt. of India for Andaman and Nicobar Islands stipulates the following approach to the development of fisheries in A&N Islands :-

- Apart from the large gap between the potential and production, the strength of the island group lies in its rich marine biodiversity, strategic geographic location, nearness to the Southeast Asian markets and entrepreneurship.
- Further development of coastal fisheries would be achieved through introduction of improved type of fiberglass crafts and improved gears and introduction of intermediate class of fishing vessels.
- Offshore fisheries would be developed through introduction of large deep-sea fishing vessels.
- Infrastructure needs for harvest and post harvest operations would be developed in identified Islands.
- Joint venture initiative to be allowed for package proposals consisting of harvest and post harvest operation to be based in the Islands with a view to improving the employment potential.

- A major fishing harbour and processing complex would be set up at Campbell Bay to attract investment.
- Fishery resources survey will be conducted systematically to continuously monitor the fishery resource and its state of health.
- Human resources development in the sector would be given priority to develop skilled manpower needed for meeting the specialized requirement.

Priorities for development:

Keeping in view the potential, the priority areas identified for development are :-

- 1) Tuna Fisheries promotion in the Islands.
- 2) Coastal Shrimp / fish aquaculture in sea water submerged areas.

Strategies for development:

The strategies for the promotion of fisheries are the following:

a) Creation of infrastructure :

Fish landing facilities with sorting, auctioning, net mending and engine repair facilities to be setup. Capacity is to be increased manifolds for ice plants and cold storages to preserve and store the fish. Fish drying platforms are to be constructed in all the areas inhabited by the fishers. Local fish markets will be constructed to promote domestic marketing. The licensed fishers would be equipped with Solar fish driers and deep freezers under the Rashtriya Krishi Vikas Yojana (RKVY) for drying, storing and marketing of their catch.

b) To strengthen the fishing capacity for tuna

Engine Fitted Boats would be equipped with Ice boxes to enable them to preserve the catch and bring it fresh to the shore. Subsidy schemes would continue to be implemented to help the fishers to

purchase small boats. Schemes would also be formulated for enabling the interested entrepreneurs to purchase larger vessels for fishing in deep sea and offshore sectors.

c) Promotion of Coastal Shrimp Aquaculture

About 1400 hectares of paddy fields that are submerged in South Andaman would be put to use by promoting shrimp/fish culture. With the help of the Central Institute of Brackish water Aquaculture (CIBA) survey in the seawater submerged area has been carried out to assess the suitability of the areas for shrimp/fish farming. The CIBA conducted the survey and reported that about 830 hectares of seawater inundated areas could be developed for coastal shrimp/fish aquaculture.

d) Product development, value addition for domestic and export marketing

Facilities would be created under public and private sectors for processing and value addition of the harvested fish.

e) To develop technical manpower for promotion of Fisheries

Training facilities would be augmented. Departmental staff and private fishers would be sponsored to get exposure and training from the island nations with similar geographical conditions.

FISH PRODUCTION

(i) Marine

Marine fishing in the islands is mainly artisanal and traditional in nature. About 6272 active marine fishers use about 1451 traditional fishing crafts, 1257 motorized crafts and 12 mechanized fishing vessels for fishing. They land their catch in 57 fish beach landing centres and one organized fish landing centre. The main fishing gears used are gill nets, Hook and lines, long lines, cast nets, shore seines/anchor nets.

The year wise fish landings for the last 8 years are given below.

Statement 6.3.1

Fish Landing

Item	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Marine Fish production (in thousand Tonnes)	27.6	27.0	28.2	31.0	17.8	12.0	28.6	28.8

Royalty on Export of Fish & Fishery Products

Most of the fish landed is consumed locally in fresh form. The current trend is for fishing high value fin fish such as groupers, snappers, emperors and shell fishes such as crabs, lobsters and shrimps. These fishes are also exported in live, chilled/frozen/salted/dried form either to mainland of India or to foreign countries by fish traders. Transportation of fish outside the jurisdiction of the Islands attracts payment of Royalty to the Govt. at the prescribed rates in the statement 6.3.2 below.

Statement 6.3.2

Royalty Rate.

S.No.	Item	Unit	Rate (Rs)
1.	Shark fins	Kg.	50.00
2	Prawns, Shrimps, Lobsters, Crabs (Chilled/Frozen)	Kg.	5.00
3.	All lives fishes including crustaceans, snappers and groupers (except Giant grouper " <u>Epinepheleus lanceolatus</u> " banned under wild life (Protection) Act 1972	Kg.	5.00
4.	All other fishes (salted/Chilled/frozen)	Kg.	1.00
5.	Shrimp Nauplii	Million	6,500.00
6.	Any species of sea shells not covered under Wild Life (Protection) Act 1972 in raw form	Kg.	10.00
7.	100% Export Oriented Units (EOUs) possessing valid green card issued by the Madras Export Processing Zone (MEPZ) having their establishment or project base in the islands shall be exempted from payment of royalty. However, such units shall furnish the details of export consignment and obtain No Objection Certificate from the Director of Fisheries on Consignment basis		

The details of fish and fishery products exported and royalty collected are in the statement 6.3.3 below.

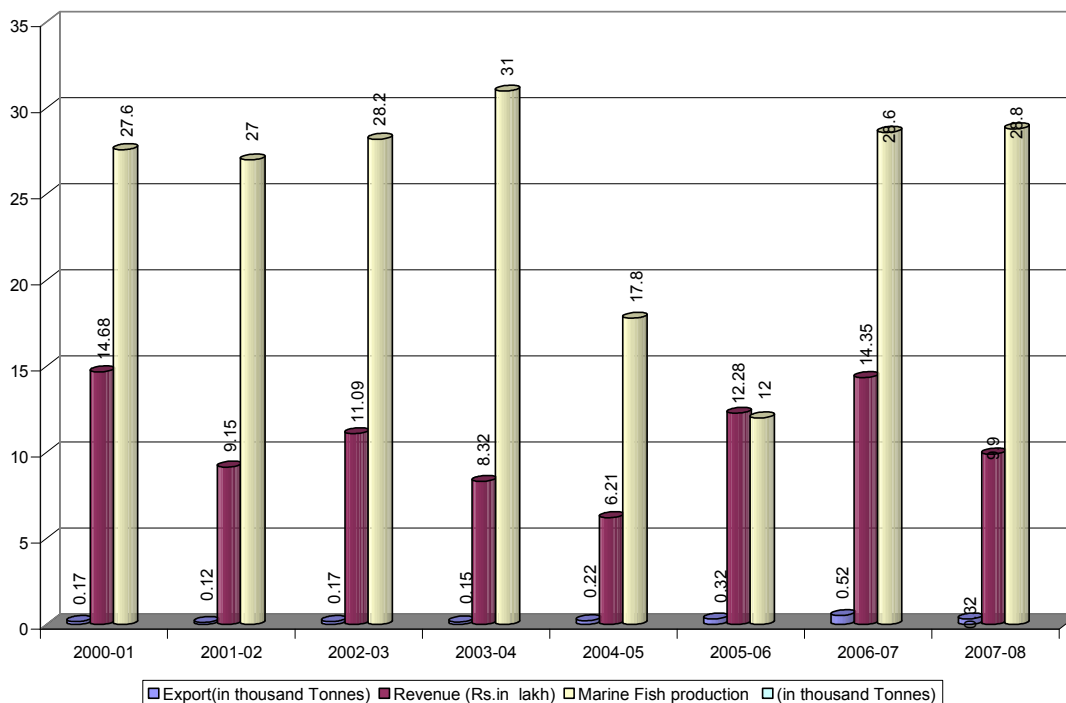
Statement 6.3.3

Fish Export and Revenue Earned

Item	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Export(in thousand Tonnes)	0.17	0.12	0.17	0.15	0.22	0.32	0.52	0.32
Revenue (Rs.in lakh)	14.68	9.15	11.09	8.32	6.21	12.28	14.35	9.90

Chart 6.3.1

Fish Production, Export & Revenue



(ii) Inland Fishery

There are about 1676 minor irrigation ponds in the Islands. The fish seed in the form of young fishes (Catla, Rohu, Mrigal) are produced through induced breeding and are reared for a period of about 30-45 days and are supplied to the farmers for stocking in the ponds for further rearing. Fresh water fish seed production and supply and fish production is given below:

Statement 6.3.4

Fresh Water Fishing

Item	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Freshwater Fish seed production and supply (in lakh)	4.50	5.69	7.56	5.52	4.96	7.13	5.80	5.10
Fresh water Fish production (in thousand Tonnes)	0.07	0.06	0.07	0.09	0.11	0.04	0.09	0.15

Credit facilities to agricultural & allied sector

The credit needs of the farmers and artisans of these Islands are met by the 37 branches of 12 commercial banks, 29 branches of Andaman & Nicobar State Co-Operative Bank, 46 Primary agricultural society spread over the Islands and ANIIDCO. The details of the loan distributed by these financial institutions for agriculture and allied activities are given in Statement 6.1.7. The crop loan continued to constitute very small component of the total disbursement.

statement 6.4

Loan distributed under priority Sector

(Rs. in 000)

	2004-05	2005-06	2006-07	2007-08
Broad Sector				
Crop Loan	18019	22952	35459	28069
Term Loan (Agri.)	31909	46794	38748	52478
Total Agri Credit	49928	69746	74207	80547
Non-Farm Sector	64294	29790	33721	51764
Other Priority Sector	394966	459642	622266	762200
Total Priority Sector	509188	559178	730194	894511

* Source:- NABARD Port Blair 2008-09

Micro Finance in the Union Territory of Andaman and Nicobar Islands

The Self Help Group concept is of recent origin in the A&N Islands and notwithstanding the impressive spread and success of SHG movement, particularly in the neighbouring southern States, the same has yet to manifest its significance in this Union Territory. There has, however, been a spurt during the last year with the number of SHGs increasing from 707 as on 31 March 2007 to as much as 1356 as on 31 March 2008. Of the 13 banks in the A&N Islands, only 07 banks had been participating in the SHG linkage programme as of March 2008.

The presence of NGOs in A&N Islands is limited. Of these, very few NGOs undertake promotion of SHGs and linking them to banks. The involvement of National Co-operative Union of India (NCUI) in SHG formation and nurturing had helped in accelerating the pace. Some of the major NGOs operating in the A&N Islands include, Association of Catholics Andaman and Nicobar Islands (ACANI), CARE India, Catholic Relief Services (CRS), Strategic Urban Rural Advancement Backing Institute (SURABI), Unnati, Yuvasakthi, etc. The Nicobar and Campbell Bay Islands do not have the presence of any major NGO other than ACANI and Unnati. CARE India is the latest entrant into the need of micro credit in these Islands. CARE India has launched an ambitious project for promotion of 2500 SHGs in a span of twenty-seven months. NABARD has sanctioned a grant assistance of Rs.33.92 lakh to CARE towards training inputs for capacity building and skill up gradation efforts. UNNATI has also been provided a grant assistance of Rs.3.00 lakh for formation and credit linkage of 100 SHGs NABARD has also associated with other NGOs in offering Awareness and Orientation training to the SHGs promoted by them.

Extent of Financial Inclusion

In the Andaman and Nicobar Islands, the position of financial inclusion has been fairly good as compared to the rest of the country. Of the three districts in the Union Territory namely, South Andaman, North & Middle Andaman and Nicobar, financial inclusion has already been completed in two districts. The achievement of 100 percent financial inclusion as on 31 st March 2008 has been formally reported in South Andaman. In the Nicobar district, all the people of the district have reportedly opened bank accounts since the tsunami relief payments were given to them by cheque. The formal notification is likely to be placed at the ensuing DCC/UTLBC forum for necessary approval. In the remaining district of North & Middle Andaman, the process of financial inclusion has been set in motion and the banks have been advised to complete the exercise by 31 March 2009.

Initiatives by the Agriculture Department

- Assistance to Farmers under High Yielding Programme: The Schemes implemented during the Tenth Five Year Plan have been merged into a new captioned scheme with an outlay of Rs.1680.50 lakh to be implemented during the Eleventh Five Year Plan.
- Assistance to farmers for promotion of Horticulture Crop & High Value Agriculture.
- Agriculture Training & Extension Programme with an approved outlay of Rs.50.00 lakh.
- The Agricultural Produce Marketing Committee Act (APMC) has been formulated and construction of Terminal Market on Hub and Spoke system to facilitate farmers in marketing their produce is in the pipeline.

tiatives by the Animal Husbandry & Veterinary Services

- The Department of Animal Husbandry & Veterinary Sciences has proposed various Programmes on Animal Health, Cattle Development; Poultry, Piggery and Goat Development and Fodder Development.
- An Intensive Dairy Development Programme is proposed.

Initiatives by the Industries Department

- A Coir Cluster has been identified at Rangat, Middle Andaman. The District Industries Centre will be the Implementing agency.
- Coir Board has been entrusted with the task of conducting a Feasibility Study for development of Coir Industries and re-establishment of the Training Centre at Car Nicobar washed out during tsunami.
- Proposal for setting up of an Apparel Training & Design Centre (ATDC) in association with the Apparel Export Promotion Council, Ministry of Textiles, Govt. of India has been approved and the funds have since been sanctioned.
- Industrial Estates set up at various places are to be developed in a phased manner to provide developed sheds and plots at concessional rates to prospective entrepreneurs.
- The Gem & Jewellery Export Promotion Council is conducting a diagnostic study to identify the areas for development of shell craft, gem & Jewellery craft, value addition and marketability as well as for setting up of a common facility centre in the Islands.

MSME Development Act, 2006

Govt. of India has enforced the MSME Development Act, 2006 w.e.f. 02 October 2006. The categories of MSME in the A & N Islands include wood based, furniture, food & beverage, apparel, paper product, paint and services sector including STD booths, Photocopying, Computer servicing, cane, bamboo and

shell handicrafts. There are 1833 registered MSMEs in the Islands generating employment to 8658 persons as on 31 March 2008.

Present Status of Agriculture and Other Extension Support Services

Agriculture and Other Extension Support Services to the farmers in the Andaman & Nicobar Islands are being provided by the Agriculture department, CARI, KVK and the Central Integrated Pest Management Centre. Extension support services in regard to non-farm and industrial requirements are being provided by the DIC, KVIB, etc.

6.4 ENVIRONMENT & FORESTS

The Department of Environment & Forests is the nodal department in the administrative structure of Andaman and Nicobar Administration for planning, formulation and implementation of policies and programmes for conservation, protection and management of the environment, forests and wildlife in the territory.

The A & N Islands are internationally acknowledged hotspot for biodiversity and support luxuriant growth of tropical evergreen forests right from water edge to the mountaintop depending on the topography and the nature of the soil. The nature has endowed these islands with unique and varied animal life both on the land as well as in the sea. Due to unique diversity and also because of their extreme ecological fragility, the major objective of the forest and eco system management in these islands is biodiversity conservation and protection of ecological services like soil and water conservation, production of timber and non timber products for local use, protection of habitat. Any disturbance to these fragile eco systems leads not only to a significant loss in diversity but also aggravate water run off and cause soil erosion.

A & N Islands comprises of 572 Islands, islets & rocks having geographical area of 8249 sq. km of which 7171 sq. km. (87%) are notified as forest land under Indian Forest Act, 1927.

Since 1987, the Forest Survey of India (FSI) using remote sensing technology is assessing the Forest cover of the country biennially. As per the State of Forest Report 2005 published by the Forest Survey of India, 6629 ha. i.e. 80.36 % of the total geographical area of A & N Islands is under Forest cover. Of which 3359 (40.72%) is under very dense forest, 2646 sq km (32.08%) is under moderately dense forest and 624 sq km (7.56%) is under open forest (FSI 2005).

A decrease of 178 Sq. km. of forest cover has been assessed in the present assessment as compared to the previous assessment(2003). The loss of forest cover has occurred due to Tsunami, which struck the Islands on 26th December 2004. The major loss was observed in the Nicobar group of Islands. The reason for decline in forest cover is also due to change in the methodology (digital interpretation) and scale of interpretation (1:50000).

Statement 6.4.1
District wise forest cover in A & N Islands

District	Geographical Area	Forest Cover	(Area in Sq. Km.)
			% of Geographical Area
Andaman	6408	5265	82.16
Nicobar	1841	1364	74.09
Total	8249	6629	80.36

Tree cover

A separate exercise was carried out where high resolution satellite data (5.8m) has been used for identification of tree patches for field inventory. The estimated tree cover in the UT is 53 Sq.km. Thus the Forest & Tree cover of A & N Islands is 6682 Sq. Km. which is 81% of Geographical Area.

Floristically, the Islands show elements from Indo-Chinese and Indo-Malayan region and 3552 plant species have been reported so far with limited survey. 365 plant species are classified as 'Threatened' 40 plants are extremely localized and not known from more than one locality and 85 species are recorded

as rare, endangered and threatened. There are about 5300 species of faunal biodiversity out of which 9% are endemic. This includes more than 220 species of hard corals, which makes these islands richest in India in terms of corals diversity and above 246 species of birds having 39% endemic. The high endemism and presence of large number of threatened species make these islands truly environmental hot spots requiring utmost attention.

Mangrove are typical closed evergreen forest of moderate height composed of trees adapted to survive on tidal mud, which is permanently wet with saline water and submerged during every tide. The mangroves had been damaged heavily and dried as an adverse impact of Tsunami. Casuarina and Sea Mohwa and also pandanus seedlings are used for plantation. However, in terms of diversity it is extremely rich having 59 species of mangroves and associated species.

With 637 sq km in the Andaman and 27 sq km in Nicobar islands under mangroves (7.72% of the geographical area as per the Forest report 2005 published by the Forest Survey of India), it is the second largest in the country after Sundarbans in terms of extent of area. The Islands with coastline of 1962 km and 35000 sq. km of continental shelf.

The management of forests in the territory is guided by the National Forest Policy 1988 whose principal aim is to ensure environmental stability and maintenance of ecological balance, which are vital for sustenance of all life forms, human, animal and plants. The legal instruments applicable in the territory for protection and management of forest include Indian Forest Act 1927, Wildlife (Protection) Act 1972, Environment (Protection) Act 1986 and Coastal Regulation Zone Notification 1991. In consonance with the objective of National Forest Policy for preserving the natural heritage of vast variety of flora and fauna representing remarkable biological diversity and genetic resources of the country, Protected Area Network comprising 9 National Parks (including 2 marine national park at Wandoor and Havelock), 96 wildlife Sanctuaries and one biosphere

reserve covering about 35% of the forest area (2504 sq km) have been constituted in the territory. Besides above, about 35% of the forest area (2386 sq km) is declared as Tribal Reserves to protect the habitat of the aboriginal tribes. Here all kinds of forestry operations are prohibited and entry regulated. No harvesting of forest produce is allowed from tribal reserves, National Parks or Wildlife Sanctuaries. Another Act that is of great significance in these islands is Forest (Conservation) Act 1980, which regulates use of forestland for non forestry purposes. No forest land, irrespective of its ownership and size can be diverted for non forestry purposes like road construction, jetty construction, buildings, horticultural plantations, schools, hospitals, irrigation projects, power houses, etc. without obtaining prior permission of Central Government. This Act has been made very stringent by including penal provisions for officials responsible for violation. Recognizing the importance of rich biodiversity and fragile island ecosystems, the Supreme Court has also issued various directions/orders for protection of forests and environment.

Important Forest types of A & N Islands

1. 1A/C1 - Giant Evergreen Forest
2. 1A/C2 - Andaman Tropical Evergreen Forest
3. 1A/C3 - Southern Hilltop Tropical Evergreen Forest
4. 1A/E1 - Cane Brakes
5. 1A/E2 - Wet Bomboo Brakes
6. 2A/C1 - Andaman Semi- Evergreen Forest
7. 3A/C1 - Andaman Moist Deciduous Forest
8. 3A/C1/2S1 - Andaman Secondary Moist Deciduous Forest
9. 4A/L1 - Littoral Forest
10. 4B/TS2 - Submontane Hill valley Swamp Forest

The department have an effective VHF of the remote area of the Islands have protection staff at strategic point along with suitable communication network, to meet the increasing challenges of protection. GIS cell was

established in 2003, This cell is now a nodal center of the Administration for interpretation of remotely sensed data.

Silviculture and Forestry Research

Silviculture research is the foundation of scientific management of the forest. Under these schemes research projects have been formulated which are to be carried out over a period of 5 - 10 years and broadly cover the establishment of seed production areas to produce quality seeds, standardization of nursery techniques, study growth of important species etc.

Forest Training and Education

To manage the forest resources scientifically, technically trained manpower is a prerequisite. The scheme aims to improve human resources at the executive level. The forest Executive staff at the level of Forest Guards and Foresters undergo, training at department run Forest Training School, Wimberlygunj. Special refresher courses for continuous up-gradation of skill and capability of the staff are also conducted.

Forests Regeneration

After harvesting of timber, the forest areas are required to be regenerated by undertaking tending of already remaining natural forest crop in the area as per prescriptions in the approved Working Plans. The operation also includes planting in big gaps. Besides it also includes undertaking plantations in degraded forest areas to enrich their growing stock. Under these schemes the old Teak plantation area will be thinned and gap will be planted with natural species as per Working Plans.

Forest Settlement and Consolidation

In order to manage forest resources scientifically, survey demarcation and consolidation of forest boundaries and settlement of rights is very essential. This scheme deals with forest boundary management, demarcation of boundary between revenue and forest lands, establishment of forest land system and reconciliation of revenue record with forest notifications.

Forests, Resources Survey and Working Plan

To manage the forest resources judiciously on scientific principles, resources survey and preparation of Working Plan is a prerequisite. The Working Plans prepared for each territorial division are to be revised periodically. Hon'ble Supreme Court (W.P.(C) No. 202 of 1995 dated 12.12.1996) in its order dated 07.05.2002 directed to revise all existing Working Plans and timber harvesting is to be confined in already worked forest areas. Working Plan revision involves demarcation, survey, forest inventory, collection of data and analysis of growth and yield of forest produce, etc.

Development of Non-Timber Forest Produce

The forests of these Islands are rich in Cane and Bamboo. There are about 300 Cane and Bamboo based small scale/ cottage/ tiny units in the Islands. These Non-timber forest produce provide livelihood to large number of people engaged in these units. The demand of these produce is ever increasing with the increase in population, as these are also required for fencing, Hut making and various domestic use by the settlers. To meet the demand, plantation of Cane in forest area is undertaken under this scheme.

Forest Extension & Publicity

The main objective of the scheme is to promote extension of tree cover beyond the conventional forests area and to educate the masses about the need for conservation and protection of forests and wildlife. Now there is a considerable biotic pressure on natural forest with increasing population. The sustainable yield available from the forests is not enough to cope with the demand for various needs of the society. In order to reduce the pressure on natural forests, this scheme envisages programmes to extend forest cover by promoting plantation of fuel wood, fodder and fruit bearing trees by farmers on their own land as well as community land etc. To involve the Panchayati Raj Institution on extension forestry, the department provide grant in aid for implementation of the area specific social forestry projects.

Joint Forest Management has been constituted for effective protection and management of forest areas and to meet the bonafide domestic need for forest produce of the villagers, action has been initiated to form JFMC in different divisions. In case of other territorial divisions, formation of JFMC is in progress.

Forests Utilization

Forest resources are also required to meet the requirement of the society for various purpose mainly timber which is harvested as per the Working Plan. This scheme makes provision for expenditure towards harvesting and transportation of timber from outlying division to feed the two Govt. Saw Mills at Chatham and Betapur.

Statement 6.4.2
Year-wise outturn of forest produce

Year	Timber (in log form) (in Cu m)	Fuel Wood(in Cord)
2000-2001	40067	32816
2001-2002	4711	15148
2002-2003	* NIL	1676
2003-2004	* NIL	6531
2004-2005	2047.832	1882
2005-2006	6907.279	592
2006-2007	5286.076	485

* Extraction of timber in round /logs form could not be undertaken due to directions from the Apex Court.

Forests Buildings and Roads

The forest officials and workers work in the interior forest areas. It is obligatory on the part of the department to provide appropriate residential accommodation to the field staff and workers, and also the non-residential accommodation for office purpose. Besides this, fair weather forest roads to facilitate transportation of harvested timber as well as patrolling to keep vigil to protect forest and wildlife are required to be constructed and maintained.

Bio-diversity and Wildlife Conservation and Eco-development

These Islands are known for its rich biodiversity and very high endemism, which need to be conserved, protected as national natural heritage. To achieve this object A & N Islands has constituted 96 Sanctuaries and 9 National Parks covering an area of 1620 Sq. Km which is 23% of the total forest area. This scheme provides strengthening the infrastructure for protection and conservation of these (Protected Area Network) Sanctuaries & National Parks. Besides, the scheme makes provision for establishment of Biological Park at Chidiyatapu including construction of road, buildings, animal enclosures etc.

Improvement of Govt. Saw Mills

Two Govt. Saw Mills namely Govt. Saw Mill, Chatham and Betapur are run and maintained by Forest Department to cater the needs of Islands for sawn timber. Most of existing machinery are quite old and requires to be replaced in a phased manner. To meet the demand of sawn timber the scheme makes provision for procurement of new machineries for replacement and also maintenance of Saw Mills. The scheme also envisages maintenance of building (Saw Mills) and other infrastructure.

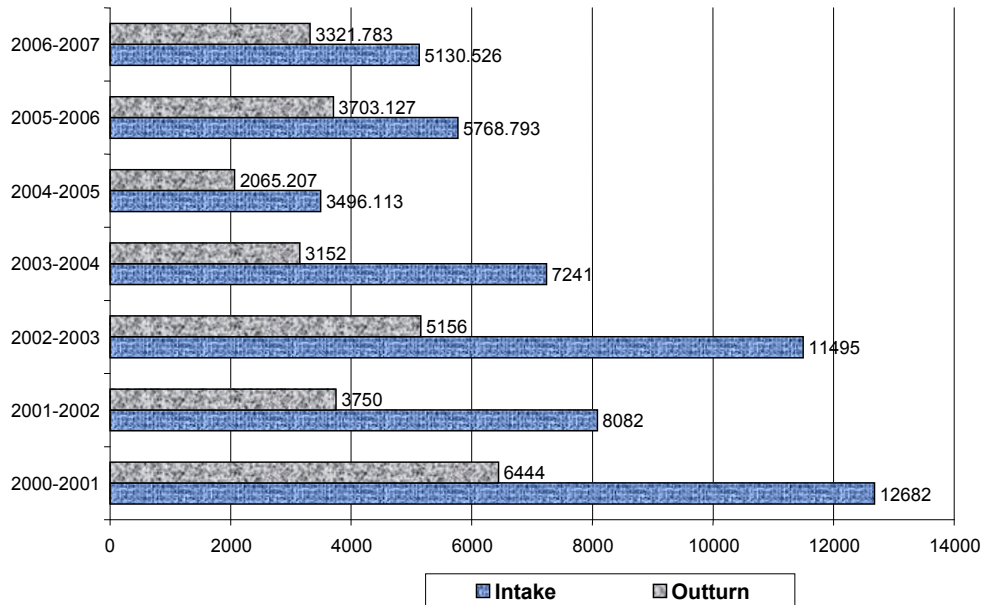
Statement 6.4.3
Year-wise intake and outturn of government saw mills

(In Cu.m.)

Year	Intake	Outturn	% of Outturn
2000-2001	12682	6444	50.81
2001-2002	8082	3750	46.40
2002-2003	11495	5156	44.85
2003-2004	7241	3152	43.53
2004-2005	3496.113	2065.207	59.07
2005-2006	5768.793	3703.127	64.19
2006-2007	5130.526	3321.783	64.75

Chart 6.4.1

Year-wise intake & outturn of Govt. Saw Mills



Protection of Forests and Coastal Eco-System

The scheme envisages augmenting the facilities in the area of mobility, communication to the protection staff to enable them to discharge their duty in effective manner.

Conservation and Development of Mangroves & Littoral Forests

These Islands have extensive open coastline and inland creeks which are fringed with littoral forests and mangrove forests respectively. Protection and development of these forests ecosystems are very important from ecological point of view. They protect the shores from the erosion by tidal waves. They also provide breeding grounds to various marine life. This scheme envisages raising of mangroves and coastal belt plantation in suitable areas.

Eco-Tourism

The Islands land spaces – hill covered from top to coast with lush green tropical forest, rich biodiversity, extensive beaches, corals and other marine life, National Parks/ Wildlife Sanctuaries; live volcano and above all pollution free peaceful surroundings attract tourists both from home and abroad. The scheme therefore provides for eco-friendly facilities for tourists at potential sites, preparation of publicity material. Details of tourists visited various National parks and Mini Zoo, Haddo and Chatham Saw Mill is as below:

Year	No. of tourists visited
2003-04	3,58,531
2004-05	53,872
2005-06	33,640
2006-07	1,33,990
2007-08	(Up to 2007) - 71,193

Under ecotourism, following places of tourists attraction have been developed by the department:

- Mahatma Gandhi Marine National Park for marine life – beautiful corals
- Mt. Harriet National Park
- Lime stone Cave - Mud Volcano and Baludera in Baratang Island
- Biological Park at Chidiyatappu

Statement 6.4.4
List of zoological garden. & national parks

Sl. No.	Particulars	Division	Area (in Hect.)
1.	Mini Zoo	South Andaman (Port Blair)	4.50
2.	Great Nicobar Biosphere Reserve	Great Nicobar	88500.00
3.	Chidiyatapu	South Andaman	40.00

4.	Campbell Bay National Park	Great Nicobar	42623.00
5.	Galathea National Park	Great Nicobar	11000.00
6.	Mahatma Gandhi Marine National Park	South Andaman	28150.00
7.	Mount Harriet	South Andaman	4662.00
8.	Middle Button	Middle Andaman	44.00
9.	North Button	Middle Andaman	44.00
10.	Rani Jhansi Marine National Park	Baratang	25614.00
11.	Saddle Peak	North Andaman	3254.00
12.	South Button	Middle Andaman	3.00

Statement 6.4.5
Area brought under social forestry

YEAR	ROAD SIDE (in Km.)	ALONG COASTAL SITE (in Km)	BARREN LAND (in Hect.)
2001-2002	11.09	14.00	54.70
2002-2003	31.86	37.64	75.50
2003-2004	17.00	18.95	37.50
2004-2005	11	8	16
2005-2006	32	96.5	20
2006-2007	33.47	96	13.29

Statement 6.4.6
Year-wise collection of important non-timber forest
produce by forest department

Category	Bamboo (Nos.)	Cane (Rmt.)	Thatching Leaves (Nos)	Post (Nos.)	Ballies (Nos.)	Paharies (Nos.)	Fuel wood (in cord)
2001-2002							
On Payment of Royalty	422935	214207	626050	9967	63515	5431	10541
On Free of Royalty	189175	39070	724900	3769	33253	3172	3286
Total	612110	253277	1350950	13736	96768	8603	13827

2002-2003							
On Payment of Royalty	753650	434835	1765350	Nil	Nil	Nil	1559
On Free of Royalty	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Total	753650	434835	1765350	Nil	Nil	Nil	1559
2003-2004							
On Payment of Royalty	735330	457346	1438226	469	19145	2684	6531
On Free of Royalty	2100	5220	8500	Nil	Nil	Nil	Nil
Total	737430	462566	1446726	469	19145	2684	6531
2004-2005							
On Payment of Royalty	448698	281144	1312600	13704	29319	666	1858
For Tsunami	12955	1897	46150	12762	35443	-	3
On Payment	80710	77140	85800	7874	1953	-	21
Total	542363	360181	1444550	34340	66715	666	1882
2005-2006							
On Payment of Royalty	323995	186758	689550	13751	79127	-	466
For Tsunami	72605	10669	92300	23129	121291	-	69
On Payment	97350	78895	3800	8899	4483	-	57
Total	493950	276322	785650	45779	204901	-	592
2006-2007							
On Payment of Royalty	461375	515126	951007	3848	8872	-	256
For Tsunami	-	-	-	-	-	-	-
On Payment	205250	190369	17450	7429	17773	-	229
Total	666625	705495	968457	11277	26645	-	485

Statement 6.4.7
State revenue and forest revenue

(Rupees in Lakh)

Year	State Revenue (A & N Islands)	Forest Revenue	% of Forest Revenue against state Revenue
2001-2002	8774.66	1483.00	16.90%
2002-2003	8966.53	785.22	8.76%
2003-2004	10095.45	679.57	6.73%
2004-2005	9662.89	374.37	3.87%
2005-2006	10625.01	630.84	5.94%
2006-2007	12532.07	632.87	5.05%