

The Impact of Tsunami on the Livelihoods of Coastal Fisher-communities in Tamil Nadu, India – *A Preliminary Damage and Needs Assessment*

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Almost all the countries situated around the Bay of Bengal were affected by the tsunami waves in the morning hours of 26 December 2004 (between 0900 – 1030 hrs IST). The killer waves were triggered by an earthquake measuring 8.9 on the Richter scale that had an epicentre near the west coast of Sumatra in Indonesia. Waves rose up to 6-10 meters and the impact was felt up to the East African coast affecting Somalia, Tanzania and Kenya.

The first recorded tsunami in India dates back to 31 December 1881. An earthquake of magnitude 7.5 on the Richter scale, with its epicentre believed to have been under the sea off the coast of Car Nicobar Island, caused the tsunami. The last recorded tsunami in India occurred on 26 June 1941, caused by an earthquake with magnitude exceeding 8.5. This caused extensive damage to the Andaman Islands. There are no other well-documented records of Tsunami in India.

Fisheries Scenario of Tamil Nadu

The State of Tamil Nadu has a coastline of 1 076 kms and an Exclusive Economic Zone of about 0.19 million sq. kms (Figure 1 & Table 1). Out of the 30 Revenue Districts in the State, 13 are located in the coastal areas (Table 2). Toothukudi (Tuticorin) followed by Nagapattinam and Ramnathapuram have the longest coastlines. There are 591 fishing villages and 362 Fish landing Centres, which are mostly small and cater to the needs of small mechanised fishing crafts and traditional boats (Table 3). The 2001 census on the fishing craft in Tamil Nadu recorded 10 278 mechanised fishing vessels, 21 471 vallams and 27 652 catamarans. The last two categories are traditional fishing crafts and about 22 000 such crafts use outboard motors for propulsion (Table 4). The fishing crafts are either made from wood (procured locally and traditionally used for making fishing boats) or Fibre Reinforced Plastic (FRP).

The Marine Fisherfolk Census carried out in 2000 enumerated 698 268 fisherfolk with the maximum fishermen residing in Kanniyakumari district followed by Ramanathapuram and Nagapattinam (Tables 5 & 6). The marine fish landings in the State are estimated around 380 000 metric tonnes per annum. About 58 000 metric tonnes of seafood valued at about Rs 21 000 million is exported annually from the processing units located in Tamil Nadu.

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Figure 1: Map of Tamil Nadu

The impact of Tsunami in India

A tsunami is not a single wave, but a series of travelling ocean waves generated by geological disturbances near or below the ocean floor. A tsunami can race across the water at speeds of 500-to 1000 km/ hour. The height of the wave only increases as the wave nears the coast. A tsunami can be 10 to 20 m high when it hits the shore. The most tsunami prone area is the Pacific Ocean and the countries around it have developed a tsunami warning system.

In the India about 9 600 people have died of which the casualties in Tamil Nadu amount to about 7 900 (see Figure 2 below for more statistics). The maximum deaths have been recorded from Nagapattinam district. It is also estimated that about 5 700 are still missing (as on 4 January 2005) and chances of getting survivors is very remote.

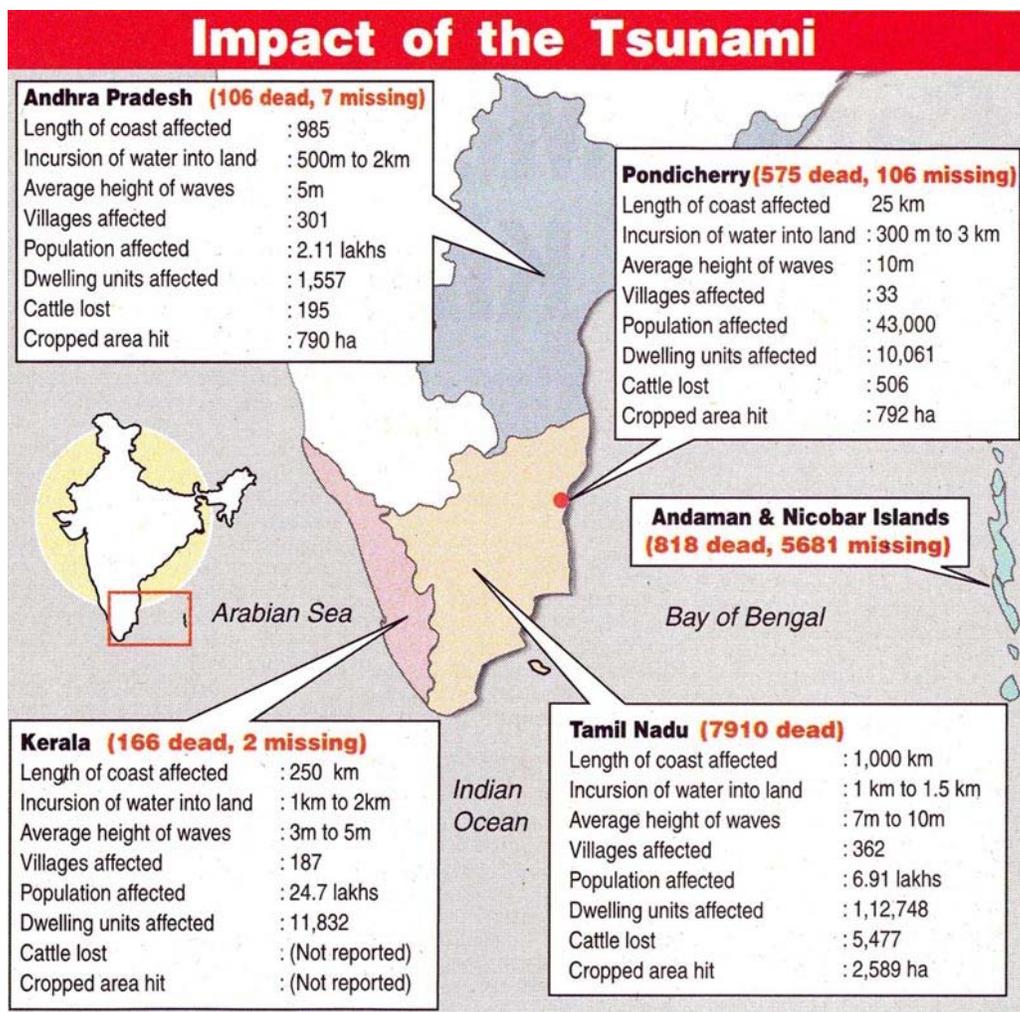


Figure 2: A comparative picture of the damage caused by the Tsunami in India

Damage and needs Assessment for Fisheries Sector in Tamil Nadu

The fisheries sector in Tamil Nadu has suffered major damages, followed by Pondicherry, Andhra Pradesh, Kerala and Andaman & Nicobar Islands. Besides loss of lives and assets such as houses and personal belongings, fishing boats and nets, the fisheries infrastructure (Fishing Harbours and fish Landing Centres) has also suffered heavy damages (Figure 3 A, B, C). This first preliminary damage² and needs assessment given below deals only with Tamil Nadu.

North Tamil Nadu:

Fishermen from hamlets stretching from Ennore in the north of the city to Neelankarai in the south suffered from the killer waves. In Royapuram Fishing Harbour (north Chennai) nature's fury caused maximum damage to property, wooden and FRP boats, catamarans and other infrastructure on the shore. Many of the fishermen have damaged or lost their boats and gears. Means of livelihood for many fishermen have been destroyed.

Nagapattinam District:

Nagapattinam is one of the worst affected Districts in Tamil Nadu by the tsunami. Many of the fishing hamlets have simply vanished. Some of the affected areas include Nagore, Keechankuppam, Akkaraiyettai, Velankanni, Seruthur, Vedaranyam and Poompuhar. Wooden and FRP boats and catamarans were destroyed by the waves. Seruthur a fishermen's colony about one km from the famous Velankanni shrine had about 230 FRP boats and 30 catamarans. A majority of the boats have been washed away, while a few lie scattered, broken and twisted. The District has large number of catamarans, both wooden and FRP material.

Kanniyakumari District

Over 400 fishermen and their families have been reported killed and thousands rendered homeless. Hundreds of fishing boats have been washed away. Kadiyapattinam and Colachal were the worst affected areas. The 3 km stretch of road between Colachal and Vaniya kudi was flooded and damaged. The number of fishing boats in Colachal is also very high – 9 386 were enumerated in the last census and many of them have been damaged.

As a consequence of the tsunami, livelihoods of a large number of coastal fishermen in Tamil Nadu stand threatened. Fishing being their sole means of sustenance, assistance is required for repair/ replacement of boats and procurement of nets, which have been damaged or totally destroyed³. With repair of boats and availability of nets, fishing can be resumed without much delay and sustenance needs met. Besides immediate aid/ relief assistance to the affected people (food, water, clothing, shelter, etc) by the Government and various aid/ relief agencies, the Government has also announced rehabilitation scheme, which is detailed below.

² More precise damage assessment will be available as affected will areas become fully accessible.

³ New boats should be provided only in such cases where the existing boat is beyond repair. Otherwise, it is likely that the Government assistance would further add to the fishing effort, which is already on the higher side.



Fig. 3A: Traditional boats and their gear lying scattered on the Marina beach, Chennai



Fig. 3B: Damaged infrastructure at the Royapuram Major Fishing Harbour, Chennai



Fig. 3C: Damaged fishing trawlers at the Royapuram Major Fishing Harbour, Chennai

Relief Package Announced by the State and Central Governments

The Government of Tamil Nadu has announced a relief of Rs 100 000 to families for every family member killed. In addition, each affected family will be given about Rs 7 000 to procure essential provisions and mend/ repair their dwellings. In addition to the above general package, fishermen will be provided with Rs 20 000 to replace each gill net in “vallams” Rs 10 000 to repair gill nets in catamarans. The State would also provide about Rs15 000 and Rs 5 000 to repair/ rebuild each unit of vallams and catamarans respectively. The State is also working out a detailed package for mechanised boats once the losses have been correctly assessed. Rehabilitation and relocation would be done at a later stage. The Government of India has made available an amount of Rs 2 500 million as the first instalment of relief fund to the State Government.

Needs Assessment

The cyclones and the rough sea during certain parts of the year have so far been the major cause of loss of life and property of small-scale fishers in the Bay of Bengal region. The Tsunami has now added a new dimension to their safety and welfare issues. Natural calamities like cyclones, earthquakes, tsunamis, etc are also becoming more frequent⁴ in the coastal areas of the Bay of Bengal and the fishermen community faces major impacts of such calamities.

The consequences of natural calamities are manifold and bring considerable hardships to the small-scale fisher families. Besides loss of dwellings and fishing assets, many lives are lost. Since their socio-economic status is also low and livelihood options are limited, the calamities further push them into the fold of poverty and deprivation.

While the immediate requirements of the fisher-communities (like food, water, medicines, clothing, etc.) are being provided by the Government and the various relief/ aid agencies, the donors or specialised agencies (FAO, Regional Fishery Bodies, etc.) may consider providing technical interventions, which would be useful in livelihood support and also institutional building on a long-term basis. In this regard the following short-term and long-term suggestions are proposed:

Short-term Technical Intervention

Preliminary estimates indicate that about 75 –80 percent of FRP boats belonging to the small-scale fishers have been badly damaged. Boats were tossed against concrete structures or dragged hundreds of meters on the beach damaging their outer structure and the inboard motors or the outboard motors. The damages to the FRP boats are in the form of gaping holes or patches scrapped due to friction with rough surfaces. Most of these boats are in the size range of 27 – 30 meters and have been used of gill netting or hook and line fishing.

⁴ *In recent times, the East Coast States of Andhra Pradesh (in October 1996) and Orissa (in October 1999) have been hit by cyclones causing extensive damages to life and property. In both the cases the fisher-communities have suffered the most.*

The cost of such FRP boats range from about Rs 65 000 to 90 000 FRP. As these boats are costly, those, which have been partially damaged, need to be repaired and put back to use. As it would be difficult for the fishers to transport the boats to their nearest FRP Boat Building Yard, it is proposed to provide a couple of Mobile FRP Boat Repair Units, which could go from village to village and service the boats. An estimate of the cost of a single mobile unit is at Annexure 1. It is also suggested to deploy one or two FRP boat-building experts who could provide technological inputs and in the process also strengthen the local expertise in repair and further maintenance of FRP boats. The technical experts could be deployed for a period of about three months.

A total cost of US \$ 125 000 is estimated for the deployment of two Mobile Units for three months in Tamil Nadu. However, this does not include the cost for deployment of an external expert/ specialist in FRP boat construction, etc. Once the major repair work is over, the Mobile Units would subsequently be handed over to the Department of Fisheries, Government of Tamil Nadu for further continuing the assistance to the small-scale fisher-community in the State.

Long-term Technical Intervention and Institutional Building

As a long-term measure, it is proposed to address the issue of *safety and well-being of small-scale coastal fisher communities* through better and efficient communication network, training and awareness programmes, organisation of fishermen groups for disaster management⁵, improved technologies for small fishing crafts, etc. The programme could also be networked with the Tsunami Early Warning System, which the affected countries have now decided to set up. In this regard, the following steps are proposed:

- *A small team comprising specialists from abroad and their local counterparts would undertake a detailed assessment of the nature and quantum of damages suffered by the fisher-communities. The Team would also assess the types of technical interventions that can be made in the State.*
- *A two-days Technical Workshop⁶ would discuss the damage assessment report and prepare strategy for further intervention –identification of geographical areas for intervention, quantum of funds required and their sources, technical manpower, timelines, etc. The Workshop could also involve experts from other Tsunami-prone areas for sharing their experiences in reducing the impacts of Tsunami on coastal fisher-communities.*
- *Implementation of the Programme (based on the availability of funds).*

⁵ A programme of this nature was implemented in Andhra Pradesh (in Kakinada) during 1997-1998 with financial and technical assistance under the Technical Cooperation Programme (TCP) of the Food and Agricultural Organization, Rome.

⁶ BOBP-IGO could coordinate organisation of the Workshop.

Table 1: Marine Fisheries Resource

S. No.	Coastal Information	Tamil Nadu		
		E. Coast	W. Coast	Total
1	Coastal length (in km)	1 016	60*	1 076
2	Continental shelf (in sq. km)			41 412
	Up to 50 m depth	22 411	844	23 255
	51 m to 200 m depth	11 205	6 952	18 157
3	Exclusive Economic Zone (in million sq. km)	---	---	0.19
	Extends to 200 nautical miles from shore			
4	Territorial waters (in sq. km) (approximately)	---	---	19 000

**Kanniyakumari District of Tamil Nadu falls on the West Coast*

Table 2: District-Wise Coastal Length

In Kilometres

Sl. No.	District	Coastal Areas				Total
		Coramandal	Palk Bay	Gulf of Mannar	West Coast	
1	Chennai	19	---	---	---	19
2	Thiruvallur	27.9	---	---	---	27.9
3	Kancheepuram	87.2	---	---	---	87.2
4	Villupuram	40.7	---	---	---	40.7
5	Cuddalore	57.5	---	---	---	57.5
6	Nagapattinam	124.9	63	---	---	187.9
7	Thiruvarur	---	47.2	---	---	47.2
8	Thanjavur	---	45.1	---	---	45.1
9	Pudukkottai	---	42.8	---	---	42.8
10	Ramanathapuram	---	95.8	141	---	236.8
11	Thoothukudi	---	---	163.5	---	163.5
12	Tirunelveli	---	---	48.9	---	48.9
13	Kanyakumari	---	---	11.5	60	71.5
	Total	357.2	293.9	364.9	60	1 076

Source: Government of Tamil Nadu

Table 3: Marine Fishing Villages and Fish Landing Centres

Sl. No.	District	Fishing Villages (nos)	Fish Landing Centres (nos)		
			Large	Small	Total
1	Chennai	44	2	9	11
2	Thiruvallur	58	1	24	25
3	Kancheepuram	44	2	37	39
4	Villupuram	19	1	18	19
5	Cuddalore	49	2	26	28
6	Nagapattinam	51	4	42	46
7	Thiruvarur	13	---	---	---
8	Thanjavur	27	2	19	21
9	Pudukkottai	32	3	17	20
10	Ramanathapuram	184	8	70	78
11	Thoothukudi	21	2	20	22
12	Tirunelveli	7	1	7	8
13	Kanyakumari	42	3	42	45
	Total	591	31	331	362

Source: Government of Tamil Nadu

Table 4: Fishing Crafts – Tamil Nadu

Sl. No.	District/ Fishing Harbours	Fishing Crafts Registered as on 31.3.2001 (nos)			Total
		Mechanised Crafts	Vallams	Catamarans	
1	<i>Chennai</i>	899	17	1 034	1 950
2	<i>Kancheepuram</i>	9	954	6 608	7 571
3	<i>Cuddalore</i>	913	367	5 586	6 866
4	<i>Thanjavur</i>	571	2 008	93	2 672
5	<i>Nagapattinam</i>	1 561	271	4 020	5 852
6	<i>Pudukkottai</i>	1 108	2 069	66	3 243
7	<i>Ramanathapuram</i>	783	5 886	---	6 669
8	<i>Rameswaram</i>	1 488	1 902	200	3 590
9	<i>Mandapam</i>	653	379	---	1 032
10	<i>Thoothukudi</i>	843	3 684	4 646	9 173
11	<i>Chinnamuttam</i>	181	117	1 099	1 397
12	<i>Colachel</i>	1 269	3 817	4 300	9 386
	<i>Total</i>	10 278	21 471	27 652	59 401

Table 5: Marine Fisherfolk Population

Sl. No.	District	Fisherfolk Population
1	Chennai	72 997
2	Thiruvallur & Kancheepuram	69 458
3	Villupuram	15 330
4	Cuddalore	41 690
5	Nagapattinam	81 946
6	Thiruvarur	10 648
7	Thanjavur	26 071
8	Pudukkottai	25 710
9	Ramanathapuram	1 20 493
10	Thoothukudi	71 457
11	Tirunelveli	20 762
12	Kanyakumari	1 41 706
	Total	6 98 268

Source: Marine Fisherfolk Census – 2000

Table 6: Employment of Male and Female Fisherfolk in Tamil Nadu

<i>Total Fisherfolk population</i>	6.98 lakhs
<i>Male</i>	3.6 lakhs (51.6%)
Female	3.3 lakhs (48.4%)
Male employed	1.94 lakhs (55%)
Female employed	0.37 lakhs (11%)

Source: Government of Tamil Nadu

Annexure 1

Mobile Fibre Reinforced Plastic (FRP) Boat Repair Units

Sl. No.	Item	Approximate Cost (in US \$*)	Remarks
A	Hardware		
1.0	Medium-sized Truck	28 000	
2.0	Generator Set (2.5 KV)	4 700	
3.0	Hacksaw & Drilling Machine	300	
4.0	FRP Material	50 000	For repair of about 5 000 boats
B	Manpower		
5.0	Supervisor-cum-Chief Technician	9 000	Engagement for 90 days
6.0	FRP Moulder	4 500	-do-
7.0	FRP Moulding helper	3 000	-do-
8.0	Carpenter	4 500	-do-
9.0	Driver	3 000	-do-
C	Miscellaneous	18 000	
	Total	125 000	

**1 US \$= INR 44.00 approximately*

The estimated cost is for two units.

Cost for deployment of the External Expert is not included.