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STUDY

LEARNING FROM INTERVENTIONS ON SHELTER AND LIVELIHOODS IN POST-DISASTER

TAMIL NADU—TEN YEARS AFTER THE TSUNAMI

LEARNING FROM INTERVENTIONS IN SHELTER AND FISHERIES LIVELIHOODS

A REPORT

March 2015

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Building and Enabling Disaster Resilience in Coastal Communities
Nagapattinam

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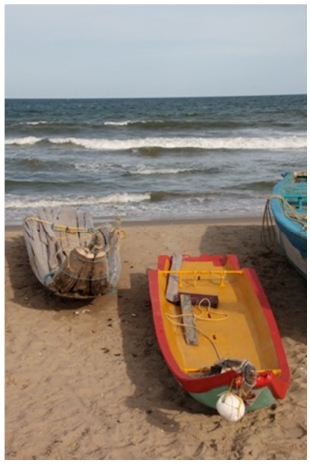
1. THE FISHING COMMUNITIES OF THE TAMIL NADU COAST

1.1. Prologue

Come, let us gather our nets from the shore,
and set our catamarans free,
To capture the leaping wealth of the tide, for
we are the sons of the sea.
Sarojini Naidu

Written over a century ago, the poem ***Coromandel Fishers*** brings to mind the Coromandel Coast's splendid surf-beaten sandy beaches dotted with tiny fishing hamlets whose presence was indicated by the catamarans lined on the beach; the craft made out of wooden logs were almost invisible as their colour blended with that of the sand of the beach; or of deceptively frail-looking craft steered through the rolling waves. The situation was much the same till about a decade after independence. Today, few such catamarans are seen. Instead the beaches have colourful fibre reinforced plastic boats, a sight that has become the norm post-tsunami, especially along the coast of Tamil Nadu where catamarans have all but disappeared.



A traditional catamaran next to a FRP catamaran

Tamil Nadu is the southern-most state of India with a coastline of 1076 km, with all but 60km on the eastern, Bay of Bengal coast, of India. The 60 km along the south west coast of India are bordered by the Arabian Sea. The geomorphology of the coast has resulted in the coast being broadly divided into four ecosystems (Figure 1.1):

1. Along the eastern coast of India bordering the Bay of Bengal, the open surf-beaten Coromandel Coast extending from Pulicat Lake in the north to Point Calimere (Kodikkarai) for a distance of 357.2 km,
2. The Palk Bay from Point Calimere to Dhanushkodi for a distance of 293.9 km,
3. The Gulf of Mannar from Rameswaram Island to Kanyakumari, a distance of 364.9 km; and
4. From Kanyakumari to Neerodi on the Kerala border on the west coast for a distance of 60 km bordering the Arabian Sea.

Figure 1.1: The four 'ecosystems' of the Tamil Nadu coast

1.2. The fishing communities

The long coastline has resulted in the proliferation of fishing communities along the coast. Tamil Nadu along with Kerala has the oldest marine fishing communities in India, with some of them having an unbroken tradition of over 2000 years. It may be noted that three of the four eco-systems mentioned earlier are associated with particular communities (castes), which have a near total hold over that part of the coast for marine fishing requires specialized skills, honed over generations. The Hindu Pattinavar community is associated with the Bay of Bengal or Coromandel Coast, the Christian Parava community with the Gulf of Mannar and the Christian Mukkuva Community with the Arabian Sea coast. The Palk Bay and the northern part of the Gulf of Mannar (Rameswaram to Vembar) comprise an assorted group of communities: some of these communities are considered marine fishing castes, while others are clearly small segments of agrarian castes that moved into fishing in the last century or so.

All fishing hamlets (some may be just streets in a larger habitation) are generally single caste and self-governed. Being largely single caste, they are related to each other through kinship groupings. Strong self-governance is the hall mark of these three zones/communities. The mosaic of communities in the Palk Bay makes it socially complex with a relative paucity of traditional institutions. Though self-governing structures have emerged in the Palk Bay and northern part of Gulf of Mannar, they are more fragmented than in the other three coasts.

The self-governing structures are also known as the **traditional panchayats (TP)** and though there is no law backing their existence and functioning, these local governance structures play a central role in the lives and livelihoods of the people. Thus, any long term programme in marine fisheries on the Coromandel Coast for instance, cannot succeed without the support and involvement of the Pattinavar Panchayats, the traditional panchayats of the Pattinavar sub-caste, the main fishing caste of the Coromandel Coast. In the case of the Christian Mukkuva community, it is the Church that holds the equivalent position.

There are also the **elected panchayats** which are constitutional bodies entrusted with local self- governance in India. The 73rd and 74th amendments to the Constitution of India have made it mandatory on the State Governments to make laws for local self-governments and to hold regular elections to the panchayats. These local government institutions are called Panchayat Raj/ Nagar Palika Institutions, or '**PRI**'. In the case of fishing hamlets, for example in the Coromandel Coast, the traditional panchayat looks after the affairs of the fishermen community. The boundaries of the village as defined by the PRI would be different, being more in tune with the 'revenue village' concept with the fishing hamlet being only a small part of it. For example, Tarangambadi is a large fishing-dominated village on the Coromandel Coast in Nagapattinam district, dominated by the Hindu Pattinavar sub caste. In Tarangambadi there are people from other castes and religions living there such as Christians, Muslims, Dalits, and other Hindu sub castes. The traditional Pattinavar Panchayat of Tarangambadi is concerned only with those of the Pattinavar caste who are into fishing and related livelihoods. When it comes to PRIs or local administration, the village forms three electoral wards of a Town Panchayat, which is a Nagar Palika Institution.

The fishing community's traditional panchayat maintains peace and plays a crucial role in resolving conflicts. Fishing communities have evolved mechanisms to ensure divisions of risk as well as profits through a share system. Shares could also be given to the old (vulnerable) people in the community. Panchayats maintain detailed records and ensure a degree of transparency in transactions. Women are not part of the panchayat. The communities were largely closed units meaning that any intra village conflicts are to be worked out within the village and outsiders, including police, could not enter without the nattar/panchayat permission.

In recent times, modernization is reported to have had an impact on the community structure, altering the traditional relationships based on kinship and community belonging due to increased individual autonomy. Community and kin relations have been replaced by modern relationships (elections, state programmes). Increased education, travel abroad and better financial situation has also promoted individualization and personal profit seeking.

1.3. Baseline Information

In 1948-49, there were some 233 marine fishing villages with a fisher population of 95735[1] (0.09 million). As the population increased over time, so did the number of fishing villages (Figure 1.2); by 2000, there were 591 fishing villages in Tamil Nadu spread along the 1076 km coastline and the fisher population was reported at 0.67 million (Table 1.1). The formation of new villages could be due to lack of space in the original village forcing people to move out to new places or it could be forced/voluntary migration due to intra-village conflicts.

[1] Indian Fisheries' published during the third meeting IPFC Madras Feb. 1951 Ministry of Agri. G.O.I.

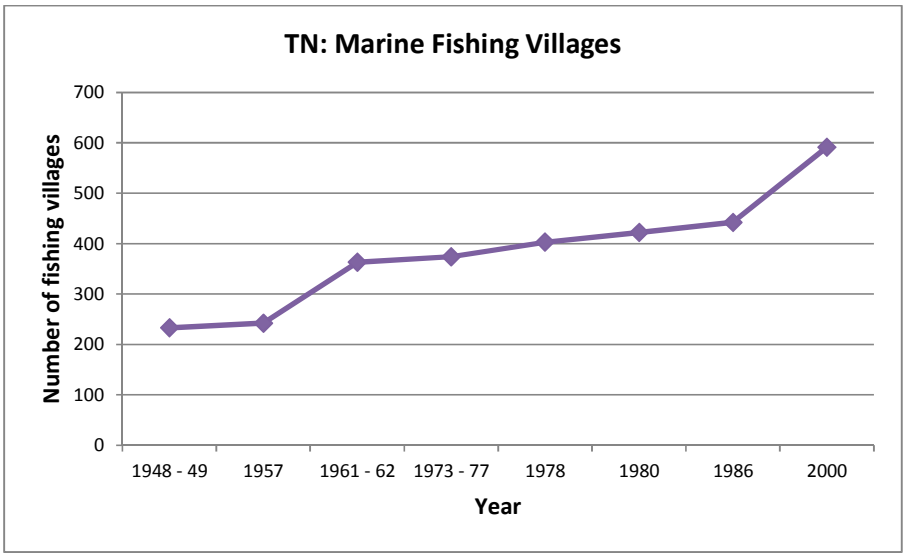


Figure 1.2: Tamil Nadu's Marine Fishing Villages[2]

Figure 1.3 gives a map of the districts of Tamil Nadu as well as the length of the coast and number of fishing communities in the district.

DISTRICT	COASTLINE (km)	FISHING VILLAGES (number): TNMF Census 2000
Tiruvallur	27.9	58
Chennai	19.0	44
Kanchipuram	87.2	44
Villupuram	40.7	19
Cuddalore	57.5	49
Nagapattinam	187.9	51
Tiruvarur	47.2	13
Thanjavur	45.1	27
Pudukottai	42.8	32
Ramanathapuram	236.8	184
Thoothukudi	163.5	21
Tirunelveli	48.9	7
Kanyakumari	71.5	42

Figure 1.3: Map of the coastal districts with coastal length and number of fishing villages

Table 1.1: Fisher Population (TNMF Census 2000)

[2] Compiled from various census reports

	District	fishing villages (number)	Fishing Community (TN MF census 2000)			District Population (Census 2001)	Number of families	Average Family size	Persons per house
			male	female	total	total			
1	Tiruvallur	58	20845	20958	41803	275475	10600	3.94	3.94
2	Chennai	44	36552	34505	71057	434364	15256	4.66	4.73
3	Kancheepuram	44	13179	12630	25809	2877468	5932	4.35	4.33
4	Villupuram	19	7542	7381	14923	2960373	3322	4.49	4.72
5	Cuddalore	49	20856	19726	40582	2285395	8659	4.69	4.68
6	Nagapattinam	51	40796	38972	79768	1488839	16609	4.8	4.8
7	Tiruvarur	13	5291	5072	10365	1169474	2373	4.37	4.37
8	Thanjavur	27	12952	12426	25378	2216138	4899	5.18	5.18
9	Pudukottai	32	12944	12083	25027	1459601	4640	5.39	5.39
10	Ramanathapuram	184	60234	57057	117291	1187604	23094	5.08	5.08
11	Thoothukudi	21	35828	33730	69558	1592769	14844	4.69	4.72
12	Tirunelveli	7	10275	9935	20210	2703492	4312	4.69	4.69
13	Kanyakumari	42	71018	66922	137940	1676034	29203	4.72	5.05
	Total	591	348312	331397	679711	28715588	143743	4.67	4.74

Both men and women are extensively employed in various activities connected with fishing as well as taking on work outside the realm of fisheries. A fairly clear gendered division of labour is seen to exist in the fishing sector. While the harvest aspect is largely taken care of by men, women in fishing communities have traditionally been very active in some of the pre harvest activities such as net making/mending and largely in the post-harvest sector of vending, processing etc.A district-wise overview of the number of literates as well as number of employed is given in Table 1.2.

Table 1.2: Total literates and employed according to the 2000 TNMF

District	Total Literate	Employed Men	Employed Women
Chennai	16653	12064	2914
Tiruvallur	43205	19511	5449
Kancheepuram	12775	7815	1361
Villupuram	6855	4225	1790
Cuddalore	21163	11910	2454
Nagapattinam	39144	23753	5416
Thiruvarur	6739	3150	1646
Thanjavur	Not Available	5990	839
Pudukottai	13126	6813	504
Ramanathapuram	65545	34574	8215
Thoothukudi	50122	19158	2022
Tirunelveli	16047	5339	815
Kanyakumari	95578	40168	3692
Total	386952.0	194470	37117.0

The fisher villages are usually located very close to the shore for two important reasons: one is that most of the craft are beach-landed and the other is because artisanal/ small scale fishers assess the sea for fish by looking at the colour of the sea, the wind direction and other such indicators before deciding on the type of nets to be used. The dominant craft in use according to the 1948-49 census were catamarans (11262) and canoes (1942). Less than ten years later, in 1957, the number of catamarans had doubled while the number of canoes increased two and a half times. The maximum number of catamarans (31851) was reported in the 1980 census at. Mechanized boats began to appear in the census of 1973-77 while motorised craft (OBM and canoes with engines) appeared ten years later in the TN fisheries department census.

A summary of the characteristics of the fisheries of Tamil Nadu and Puducherry is given in the Table 1.3.

Table 1.3: Characteristics of the fisheries of Tamil Nadu and Puducherry, 1950—2004
Extracted from Table 1 (FIMSUL 2011).

Period	Characteristics/changes
1950s	• A non-mechanized fishing fleet composed entirely of traditional craft and gear; continuing use of cotton and natural fibres; • Fishing close to the shore; • Some expansion due to fishing population increase and improvements in transport system
1960s	• Start of dramatic changes. • Introduction of nylon nets in the artisanal sector leads to increased productivity and expansion. • Start of mechanization programme with introduction of mechanized gill netters in 1960, which had limited impact. • Mechanised trawl boats introduced in the second half of decade and started becoming noticeable by end of 1960s. • Start of export oriented fisheries that led to ice plants, cold storages, etc. • Nevertheless, it was essentially a decade of artisanal sector expansion
1970s	• Trawling takes off due to attractive international price for shrimp, starts contributing significantly to production. • Competition and conflict develops between the artisanal sector (still without mechanical power) and the new mechanised boats (essentially trawlers); • Conflicts reach a peak in 1978 across the coast and first set of Government actions to protect artisanal fishermen; 3 day-4 day rule in the Palk Bay devised. • Mechanised sector catches outstrip artisanal sector catches by end of decade. • Indo-Sri Lankan maritime boundaries fixed in 1974 and 1976, but no immediate impact on fishing and fishermen
1980s	• Competition and conflicts continue, leading to enactment of TN Marine Fisheries Regulation Act (TNMFRA) in 1983 and the creation of a 3-mile zone for artisanal fishing. • Trawlers reach a plateau and start next round of expansion with adoption of High Open Bottom Trawl nets, diversification to finfish and cephalopods, etc. • Start of civil war in Sri Lanka brings distress to Palk Bay districts due to proximity and the continuation of the historical fishing practices across the

Period	Characteristics/changes
	border. Despite risks, the mechanised boat fleet of TN in the Palk Bay increases due to decline of fishing on Sri Lankan side of Palk Bay. • Motorisation of artisanal sector starts, but limited progress on the east coast. However, Kanyakumari fishermen adopt imported 8 hp kerosene Out Board Motors (OBMs) with new marine plywood boats with specific focus on fishing in Kerala. • 1987 also heralds the start of India's first indigenous deep sea fleet in Thoothoor (Kanyakumari Dist) that starts targeting sharks all over the west coast of India using mechanized gillnet boats.
1990s	• Motorisation picks up on the east coast based on the use of 5 hp Lombardini diesel long-tails on *kattumaram*s and new 'Maruti' FRP beach boats[3]. • Still, non-mechanised vessels remain a significant presence by end of decade. • Mechanised trawlers continue to scale up gradually. • Motorisation on the west coast (Kanyakumari Dist) becomes a dominant factor. • The Thoothoor shark fleet starts moving beyond the shelf to catch pelagic sharks. • Chennai trawlers start multi-day fishing taking them increasingly into Andhra waters; some diversify from trawling to multi-day gillnetting in the mid-90s
2000s-Pre tsunami	• Crisis in trawl sector with declining catch rates; leads to next level of expansion—multi-day fishing on the Coromandel coast and the shift to offshore gillnetting by a section of mechanised boats in Chennai. • Use of banned pair trawls also increases due to competition. • Motorisation and replacement of *kattumaram* with FRP boats gain momentum. • The Thoothoor shark fleet starts yellow fin tuna fishing with support of export firms.

This, therefore, is the background of the fishing villages along the Tamil Nadu coast when the tsunami struck on the 26th of December 2004.

1.4. The 2004 Indian Ocean Tsunami

The Indian Ocean tsunami of 26th December 2004 was one of the deadliest disasters of recent times resulting in about twenty three thousand people dead or presumed dead across fourteen countries in South Asia and East Africa (USGS n.d.). The countries most affected include Indonesia, Thailand, Sri Lanka and India. The undersea earthquake of magnitude M_w 9.1–9.3 occurred at 00:58:53 UTC (6:28 IST) with epicentre between Simeulue and mainland Indonesia off the west coast of Sumatra, Indonesia. This earthquake was caused when the Indian Plate was subducted by the Burma Plate (Figure 1.4). The strike slip along the plane of subduction has been reported as the third largest since 1900. There were more than 1600

[3]Though Govt subsidies did help the spread of motorisation, the real credit goes to the technical break through made by the Greaves company in making available an affordable, rugged diesel long tail motor that could be easily fitted on a *kattumaram*. The "Maruti boat" is an innovation of a small private boat yard. The fishermen themselves were motivated to adopt motorisation in view of the declining catches in near shore waters. Motorisation of the artisanal fishery in TN was a gradual process spread out over two decades unlike the frenzied change-over that took place in Kerala in just 3-4 years.

aftershocks in Sumatra and across the Andaman and Nicobar region covering a 1300 km long secondary rupture. The massive undersea earthquake generated tsunamis that devastated the shores of a dozen countries in the Indian Ocean region with waves upto 15m (50 feet) high.

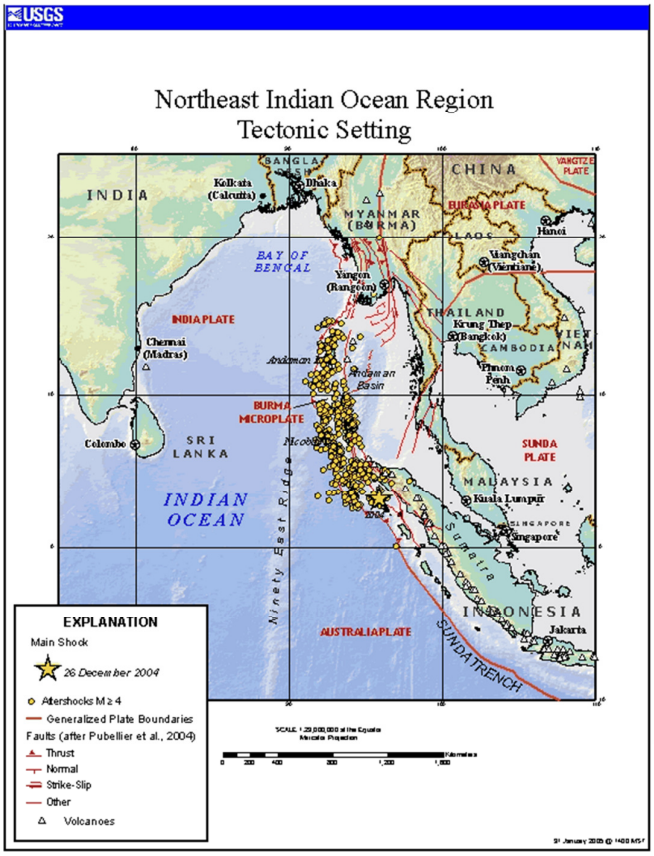


Figure 1.4: Epicentre of the Earthquake, aftershocks and location of the plates (USGS)

In India, the east coast of the mainland was most affected by the tsunami waves. Andaman and Nicobar Islands lying close to the epicentre were affected by the earthquake as well as tsunami (Figure 1.5).

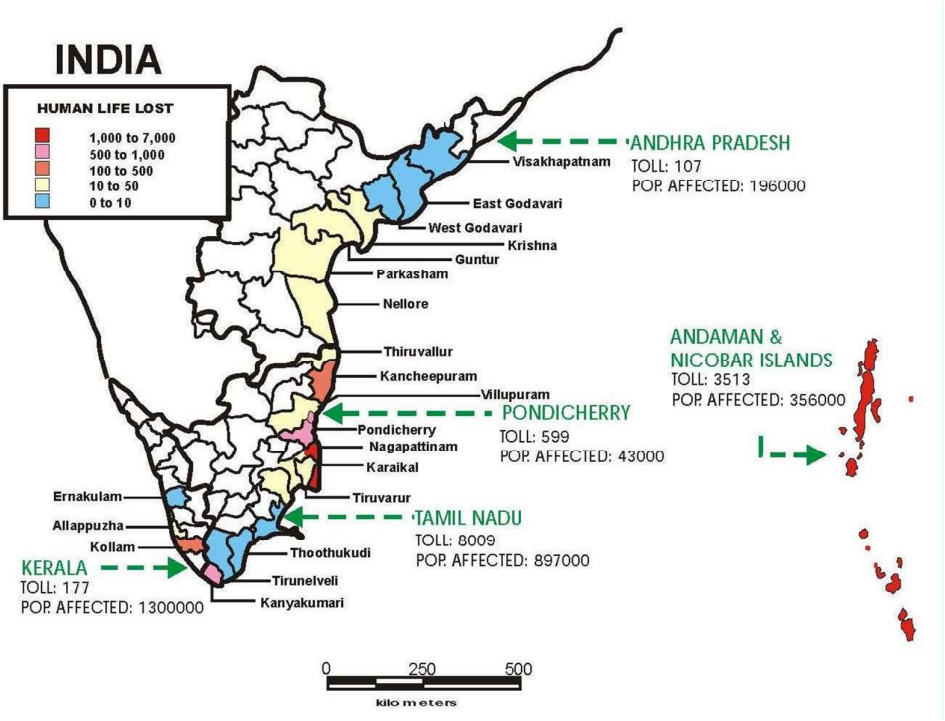


Figure 1.5: Map of Tsunami affected areas in India. Source: UNTRS

A joint assessment mission by the World Bank, Asian Development Bank and the United Nations was carried out at the request of the Government of India in February 2005. The summary assessment is given in Table 1.4:

	Damage and losses			Effects on Livelihoods
	Damage	Losses	Total	
Andhra Pradesh	29.7	15.0	44.7	21.2
Kerala	61.7	39.1	100.8	36.3
Tamil Nadu	437.8	377.2	815.0	358.3
Pondicherry	45.3	6.5	51.8	5.9
TOTAL (by sectors)	**574.5**	**448.3**	**1,022.8**	**421.7**
Housing	193.1	35.4	228.5	
Health and education	10.7	12.9	23.6	
Agriculture and livestock	15.1	22.4	37.5	26.0
Fisheries	229.6	338.2	567.8	338.2
Livelihoods (Microenterprises and other)	20.0	37.5	57.5	57.5
Rural and municipal infrastructure	28.0	1.6	29.6	
Transportation	35.2	0.3	35.5	
Coastal protection	42.8	0	42.8	
Relief a/		200.7	200.7	

a/ Relief provided by the local, state and national governments (not included in Total (by sectors)).
Source: JAM estimates on the basis of information made available by the governments and direct observation.

Table 1.4: Preliminary summary of damage and losses ($ million) (JAM 2005)

1.5. The Impact of a Tsunami

A tsunami is a series of travelling waves (called a wave train) of extremely long length and period resulting from a massive displacement of water most often caused by an undersea disturbance, such as an earthquake, landslide or volcanic eruption. In the deep ocean, tsunami waves can travel at speeds of 500 to 1,000 kilometres (km) per hour. Near the shore, however, a tsunami slows down to just a few tens of kilometres per hour. Bathymetry, coastal topography and elevation determine how tsunami waves will behave and interact and how far inland they will reach. Thus, a tsunami that is just a metre in height in the deep ocean can grow to tens of metres in the shoreline. Tsunamis are unique in that the energy extends through the entire water column from sea surface to the ocean bottom, unlike waves generated by cyclones which are wind-driven. It is this characteristic that accounts for the great amount of energy propagated by a tsunami and the destruction they can cause.

The 2004 Indian Ocean tsunami, as can be seen from Figure 1.6, had an impact time of many hours. Nearest the epicentre, it was quick (within the hour), the waves reached the east coast of India three hours later and some areas along the west coast of India were impacted 4-5 hours after the original quake.

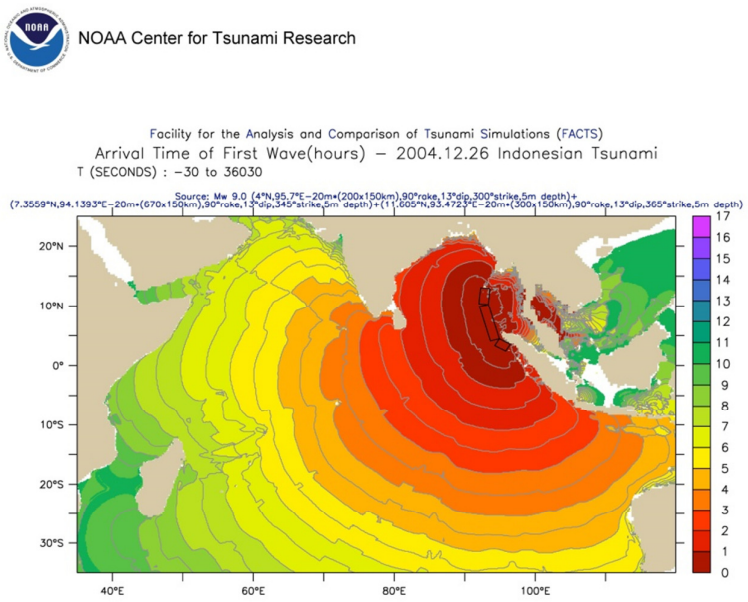


Figure 1.6: Arrival of the waves at different locations

1.6. Run-up and Inundation

Run-up is the difference between the elevations of maximum tsunami penetration and sea level just before the tsunami attack, while inundation distance is the horizontal distance of the point of penetration (on land) from the seashore (Figure 1.7).

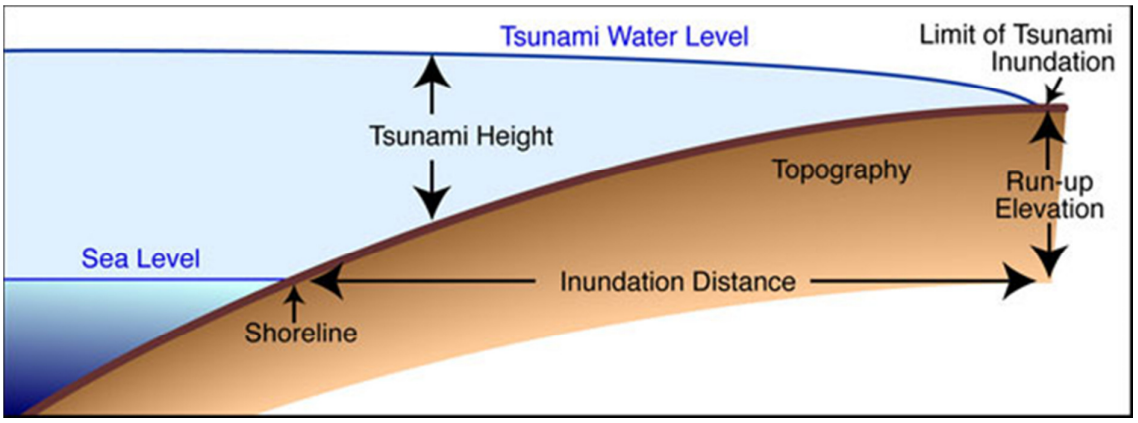


Illustration by Bruce Jaffe. Tsunami Terms http://walrus.wr.usgs.gov/news/tsu-terms.html

Figure 1.7: Run-up and Inundation

Damage survey revealed wide variations in the tsunami run-up and intensity for the Indian coast. The run up ranged between 3-4 m in the case of Chennai, 4m in the case of Puducherry, 6-7 m in Devanamakuppam, 8-9 m in Kilinjal village and 10-12 m in Nagapattinam. The measured inundation data were strongly scattered in direct relationship to the morphology of the seashore and the tsunami run-up. Lowest tsunami run-up and inundation was measured along the coast of Thanjavur, Puddukkotai and Ramnathpuram districts of Tamil Nadu in the Palk Strait (Narayan, Sharma and Maheshwari 2005). Along the west coast, variation in tsunami intensity was observed with intense damage occurring during the second wave of the tsunami. The receding wave from the first tsunami are believed to have interfered with the waves reflected from the Maldives and this along with the narrow width of continental shelf from Keelamanakudy village to Colachel harbour is reported to be the major reason behind the large amplitude (run up 9-10m) along the west coast during the second wave and the consequent high levels of destruction. Local increase of tsunami damage near the mouth of rivers due to refraction of tsunami waves was also observed (Paul 2006).

The worst affected was Nagapattinam district in Tamil Nadu. Studies by ICMAM indicate that the dual wave effect (straight waves plus diffracted waves from Sri Lankan coast), gentle slope of continental shelf and gentle elevation of hinterland coupled with the presence of Uppanar river and Vedaranyam canal in the southern side resulted in the high impact. The impact on the southern part was more than northern part due to the presence of these water bodies through which the successive progression of tsunami waves pushed the waters to distances beyond 1 km. Where the shoreline was protected by sand dunes, the impact was due to waterways that carried the tsunami wave inland (Subramanian 2005).

1.7. Death and Devastation in Tamil Nadu

Table 1.5 gives a summary of the district-wise impact on the population in Tamil Nadu while Figure 1.8 is a map of the affected Taluks. As mentioned earlier, the worst affected was Nagapattinam district, followed by Kanyakumari and Cuddalore districts in terms of death toll. It was only the coastal fringe (mostly up to 500 m from the sea) that was badly affected even though water did come 3 km inland in some areas. Fishing villages on the coast were the

worst affected and the fishing community was the biggest loser of lives and livelihoods. Neighbouring agricultural areas were also affected by sea water inundation and sea mud deposits, but loss of lives was low.

The damage was severe because of many counts. The tsunami was an unprecedented occurrence. The death toll was also because seeing the sea initially recede, people ran to the beach out of curiosity and were engulfed by the huge wave that subsequently arrived. Women in some places were waiting on the beach for the boats to come in with their catch; in other places, the initial receding of the sea exposed the intertidal zone and many ran to collect crabs and molluscs thus exposed. Women's ability to run and save themselves was hampered by their dress, in places their saris were caught by the thorny bushes nearby. Children playing on the beach were a huge causality. In a short while, dead bodies and debris were strewn everywhere, with large boats being carried inland and even deposited on top of buildings. It was not just the incoming waves that caused the deaths but the retreating waters along with debris that caused injuries and many casualties. Cattle and poultry were also killed. Large tracts of agricultural land were affected with the inundation by salt water and saline deposits.

Table 1.5: Tsunami damage across the districts of Tamil Nadu

	S.No District	No. of villages affected	No of kuppams affected	Population of the district as per 2001 census	Fisher population - 2000 TN MF	Population affected by the tsunami	Population evacuated	Human lives lost	Persons injured	orphaned children	women widowed
1	**Tiruvallur**	6	38	2754756	41803	15600	-	29	-	-	6
2	**Chennai**	4	25	4343645	71057	73000	30000	206	9	-	35
3	**Kancheepuram**	30	44	2877458	25809	100000	60000	130	24	9	17
4	**Villupuram**	8	19	2960373	14923	78240	37500	48	46	-	5
5	**Cuddalore**	8	43	2285395	40582	99704	61054	610	259	12	78
6	**Nagapattinam**	38	73	1488839	79768	196184	196184	6065	2375	179	294
7	**Tiruvarur**	-	-	-	10365	-	-	29	3	3	14
8	**Thanjavur**	22	-	2216138	25378	29278	4600	37	482	2	-
9	**Pudukottai**	25	29	1459601	25027	66350	4857	15	-	-	-
10	**Ramanathapuram**	40	114	1187604	117291	84000	8315	20	2	-	4
11	**Thoothukudi**	23	-	1572273	69558	110610	11625	3	-	-	1
12	**Tirunelveli**	10	-	2723988	20210	27948	11170	4	6	1	1
13	**Kanyakumari**	16	33	1676034	137940	187650	46280	799	754	3	106
	Total	230	418	28715578	679711	1068564	471585	7995	3960	197	561

Figure 1.8: Map showing taluks affected due to tsunami ((GoTN 2005)

2. OBJECTIVES AND METHODOLOGY

2.1. Study Objectives

While there have been numerous studies of the tsunami response, , the documentation of the wide canvas of tsunami response has been patchy. A comprehensive overview is lacking. Even the stories of what transpired in individual sectors like shelter, fisheries, alternative livelihoods, health, education, psycho-social support, social security, etc., have not been documented adequately.

The primary objective of the study is to document the tsunami response in two of the key sectors—shelter and fisheries—and drawing lessons from them. Carried out ten years after the disaster, the study aimed at understanding and documenting not only what had happened in the initial aftermath of the disaster but also the evolution of the rehabilitation and recovery process and the current status.

The specific objectives of the study are as follows:

- To document and review the significant interventions made by different actors in shelter and housing and fisheries after 2004 tsunami;
- To assess the overall changes in marine fisheries since 2004 tsunami; and
- To document good practices/lessons learnt, especially related to shelter and housing and fisheries management, under post-tsunami rehabilitation.

2.2. Study Methodology

2.2.1. Studies related to Fisheries

The methodology followed for this aspect of the study consisted of the following:

- Literature survey and early discussions
- Workshops –sessions with people who had held responsibilities and positions during tsunami, relief, rehabilitation, and reconstruction phases
- Two workshops were held covering East Coast and West Coast
- Field visits – these included visits to selected villages along the tsunami affected coasts. A set of methods were used for understanding issues as follows:
- Transect walks to develop an understanding of the fleet and fishing methods
- Extended unstructured interviews with fishermen, women fish vendors, community leaders, panchayat office bearers, and office bearers of community institutions
- Focus group discussions involving women fish vendors, fishermen, and leaders of community institutions
- Photo documentation

2.2.2. Studies related to Shelter

The methodology followed for understanding the status of housing ten years after the tsunami included the following:

- Literature survey and early discussions
- Examining NCRC database for information on progress and decisions taken at various times
- Government Orders related to housing
- Field visits, unstructured discussions and interviews with people living in post-tsunami housing in Chennai, Tiruvallur, Kanchipuram, Cuddalore, Kanyakumari and Nagapattinam districts.
- Discussions with the District level and State level officials
- Photo documentation of the state of housing

3. THE ACTORS AND THEIR RESPONSE

3.1. Introduction

The following sections seek to trace the course followed in the relief-rehabilitation-recovery process after the 2004 tsunami. They seek to highlight the different actors, the way they responded; the different phases of response and some crucial decisions that were taken at various stages that have had various impacts on the mantra of 'building back better'. There are first person accounts, extracts from blog posts and discussions at meetings as well as reflections over time of the activities. The focus is largely on the recovery of fishing communities as they were the ones most affected and in the limelight in the post-disaster arena.

Disasters are not new to India. The regular cyclones and floods especially during the monsoons resulting in extensive destruction including loss of life and property, have led to the development of standard operating procedures to tackle them, especially in those hazards where early warning is possible. For example, in the case of cyclones, especially after the 1970s, advanced forecasting methods and improved early warning systems along with evacuation procedures as well as the construction of cyclone shelters, have reduced the death toll considerably. During the cyclone season, the fishing communities along the coast, apart from their own traditional knowledge systems, are also provided with advisories and warnings from the IMD about rough seas. Before the onset of the monsoon, the government at various levels has standard operating procedures that are followed to prepare for heavy rain and floods in specific areas.

3.2. The 2004 Tsunami

The tsunami was an unprecedented phenomenon. Though there have been tsunamis in the past, such an event had not been experienced in recent history. The State and the district administrations were not aware of a danger like tsunami. It was a warm sunny day and the day after Christmas in the winter holiday season, when the tsunami struck. The devastation of the coast happened in a matter of minutes. In Nagapattinam district, the scale of the disaster was very high: 75 % of total deaths in the district were in a thin 10 km stretch in the town, Nagore and Velankanni areas translating to about 450 deaths per square km. This was quite out of the scope of even the district administration to cope with as even the primary health centres and hospitals were flooded. Bridges were washed away and the approach roads to many hamlets, especially in the remoter areas, were washed away.

Bridge washed away (NCRC)

3.3. The first few days

The first response was left to the local people and to the district administration. There was undoubtedly chaos in the initial stages but as the scale of the disaster unfolded, especially in Nagapattinam, teams from the nearby districts rushed in to help. One of the reasons for the initial slow response was the disbelief about such a phenomenon as flooding of coastal areas when there was no rough weather warning; when the first news came in, it was brushed off as a rumour and idle scare-mongering. Though communications in certain areas were down, word got out quickly about the disaster and people from all over the country began rushing towards the disaster-hit areas with offers to help.

Box 3.1

Taragambadi 30th Dec 2004

It struck on 26th December 2004, a Sunday and the day after Christmas. It was reported, initially in the Television as "Giant Tidal Wave" and then by the Japanese term "Tsunami". The initial reports had quoted very low causality figures. However within two days the figure in India had crossed 5000 Mark and we knew that we had to do something.

After a couple of calls, we (Annie and I) decided to go to Nagapattinam, the worst affected district on the Indian mainland. We were to join with the "South Indian Federation of Fishermen Societies" (SIFFS), an organisation we knew from long ago, in their relief efforts at Taragambadi. Taragmbadi is a village in northern Nagapattinam District, close to the Union Territory of Karaikkal. Taragambadi, is the old town of the Dutch East India called 'Tranquebar'.

…

A few hours before we planned to leave, we got a call from Vivek, (CEO of SIFFS), requesting us to take two women, Sushma and Nandini, from Gujarat along with us to Nagapattinam. So we were a team of five (Annie, her son Anand, Sushma, Nandini and I) that started out to Nagapattinam on the evening of 29th December 2004. After an overnight halt at Tirunalveli, we reached, Tiruvarur, about 25 Kms from the district HQ of Nagapattinam at 1PM.

….

When we reached the village (Tarangambadi), it was deserted. All living people had moved out due to the "Tsunami Warning". We drove through an arch gate and went near the Dutch Fort. So far so good, we did not see any damage. Then we turned north and entered the Village.

Though we expected something very bad, we were not prepared for what we saw, the whole place had been turned upside down. Many houses had been twisted out of shape and there was no trace of some. We then went to the beach, where the huge tidal waves had come just four days ago. We visited the spot where the SIFFS society stood. It had been washed away along with the Secretary of the Society.

This was the fourth day and there were still some dead bodies in the collapsed houses. The SIFFS team was in the village and had mobilised some local people and a JCB earth mover. Teelar, the SIFFS Deputy CEO, was in a JCB, trying to recover a body from a building. After a lot of effort, the body was brought out. It was a girl's body. It seems she was married only a few months ago and her husband was going from camp to camp trying to trace her. Someone rushed to inform him of the fact.

Death was all pervasive. Everyone we met had lost someone. The SIFFS supervisor had lost his mother. A villager, whom we met near the temple, had lost all three of his children. Some more bodies were recovered and identified. We saw another group, (Probably RSS) also working at recovering bodies.

The scene left me numb. Thankfully the dusk came quickly and we retreated to the SIFFS office at Karaikkal.

Amarnath Raja, CEO, InApp
Excerpts from http://tsunami-nagi.blogspot.in/2005/04/taragambadi-30th-dec-2004.html

Once the government was seized of the matter, revenue, police and fire service and medical staff and ambulances were rushed in; earth movers and other equipment were mobilized. Standard operating procedures for rescue and relief were operationalized. The Navy and the Red Cross were called in to help, helicopter reconnaissance was done along the coast. Relief centres were immediately opened, cooking centres began functioning and the retrieval and disposal of bodies began.

It was only by the third day that the full scale of the disaster along the entire coast was visualized. The Hon'ble Chief Minister announced initial relief packages. In fact, the first Government Orders issued by the government (GO 574 and 575) were on 28th December 2004 and detailed the release of Rs 1 lakh as ex-gratia to the kin of the deceased and a relief package of clothes, food and other essentials.

A team of fifteen hand-picked IAS officers was entrusted the task of managing relief. Area teams were formed with members across the different line departments. Each team leader and member brought in his capacity and experience coupled with manpower and machines under his control (Radhakrishnan 2008). A notable step was the Government Order declaring that CAG audit was not applicable to till 21st January or so for relief operations. (Vivekanandan 2008).

Box 3.2

Q: How did the machinery get into action – at the state level, at the district level and the village level?

A: At the state level, lot of decisions were taken in terms of empowering the district collectors. The relief commissioner got the order of the government to provide Rs 1 crore to be placed at the disposal of each of the Collectors to undertake immediate relief efforts. Normally, in disasters, the collectors are empowered to take some money out of the treasury for ex gratia payments etc. But because of the tsunami being a disaster of higher proportions, even for burial of bodies, safe disposal etc additional chemicals were required. Adequate financial resources were provided to the collectors to organize this. The government also deputed ministers of the cabinet and senior officials who had already worked as collectors to manage small groups of villages. The idea was to enable the district administration and the government to be seen at every corner of the state, especially in Nagapattinam. Some of the collectors like Mr Bedi, Collector of Cuddalore, himself affected by the tsunami,

had the forethought to get government hospitals cleared, to take care of the newly affected persons. The government also gave some exemptions like the post mortem certificate being insisted upon in case of burial was dispensed with in this case because of the large numbers of dead. At the village level, the Panchayati Raj functionaries were available. In terms of support from various communities, there was strong action by the Muslim congregation, the Christian missionaries, as well as the Hindu groups who organized the relief and rehab work at every place. (Sankar 2008)

C.V. Sankar, Officer on Special Duty (Relief and Rehabilitation),
Department of Revenue Administration, Government of TN.

The scale of the disaster not only in India but in multiple countries in the Indian Ocean and the fact that communications in this age of the mobile phone and internet is swift ensured that the media in every corner of the world was splashed with horrifying pictures of the disaster. The humanitarian response was naturally awesome. But as always, it is the local community that is the first respondent after a disaster.

Box 3.3

Kallar Village

On the morning of 31st December, the last day of 2004, we visited a village on the Southern side of Nagapattinam. There were about 90 deaths in the Village. The community had risen to the challenge quite admirably. Most of the dead had been buried and some cremated. The community leaders had taken charge of the emergency. They had organised joint kitchens and a godown to receive assistance as and when it came.

We felt very welcome to the Village. The people there spontaneously came to us and described most of the events. They asked us a lot of questions about damages in other villages and other parts of the country.

This is a community that we knew were in full control. All they required was assistance in terms of money and materials and they could look after themselves.

Amarnath Raja, CEO, InApp
Excerpt from http://tsunami-god.blogspot.com

Almost five years after the tsunami, as part of a study carried out in the two districts of Cuddalore and Nagapattinam, information was sought to be elicited about who should be the ideal responders during disasters based on their experiences. Interestingly, in Nagapattinam district, the ideal responder was overwhelmingly the government (i.e. the District Administration) followed by the elected and traditional panchayats. In the case of Cuddalore, the government was seen as a third choice after the traditional panchayats, the elected panchayats and the local youth (Babu, et al. 2008). The scale of the disaster and the effectiveness of the government's response had remained with the people even five years later.

3.4. The need for coordination

In India, the Central Government provided most of the resources for the relief and immediate rehabilitation and facilitated the availability of multilateral funds for the rest of the needs. But in this disaster, it was not merely coordination between a few groups of people. The scale of the disaster brought in its wake a huge inflow of people from all over India rushing there to help. These included:

- Non-Governmental Organizations (NGO)
- International NGO
- Donor Organizations
- Religious Organizations
- Organizations with specific constituencies such as the aged, children, women
- The United Nations group
- Banks – The World Bank, Asian Development Bank

While some of the organizations came with specific agendas, most came with funds, a lot of it mobilized on humanitarian grounds. The result was an overflow of funds with often, specific timelines to use the funds. While many organizations came in with good intentions, they often did not have the capacity to understand the ground realities and tried to apply wrong principles (e.g. agrarian principles to fisheries). International and pan-national organizations partnered with local organizations. A frenzy of 'giving' resulted; with the first round of giving in the form of brightly coloured fibreglass boats, with the names of the donor painted clearly. Tangible asset creation as an objective was often used to generate more funds from donors.

While coordination of the various actors involved in the relief, rehabilitation and development of any affected population is primarily the responsibility of the Government, the sheer numbers of actors in the post-disaster scenario called was an unusual and unprecedented situation with NGOs for the first time ever having resources that enabled them to offer support to the Government itself.

Box 3.4

The Relief Commissioner who was overwhelmed with not only the immediate relief activities but also in terms of organizing for various packages for relief, medical and other related relief activities and also forced to meet large number of people from INGOs, UN organizations, WHO etc. There were also high profile visits of the PM, Defence Minister and others had to be organized. A large number of NGOs came forward to assist and there needed to be a proper office to coordinate the response and to see that the intentions of the donors are properly translated. Thus there was a need for an officer who would handle all these agencies and also work with the Collectors in coordination. He was placed as Officer on Special Duty, Relief and Rehabilitation on 31st December 2004 to handle all agencies and to coordinate response. (Sankar 2008)

C.V. Sankar, Officer on Special Duty (Relief and Rehabilitation),
Department of Revenue Administration, Government of TN.

The flood of funding led to different levels of Government finding it more convenient to tap NGO funds than go to the next higher level. For example, the GoTN found it easier to encourage NGO role in housing rather than utilise the World Bank loan which came with very many procedures and clearances. The District administration in turn found it easier to ask NGOs to fund activities that would involve the red tape and delays in it had to go to the State Government. A third source of interest in NGO coordination was the donor community, especially INGOs. They wanted a mechanism that helped them choose areas of work and local NGO partners from a list. They wished to avoid duplication or being taken for a ride by local NGOs.

Box 3.5

The NCRC, Nagapattinam

Over 500 NGOs/ CBOs/ educational institutions and an equal number of individual volunteers arrived in Nagapattinam within days of the disaster, some offering financial, material, technical or human support; some with prior disaster related experiences and skills, some with just their voluntary spirit moving them to offer unconditional support. Among these was Sushma Iyengar from Gujarat who had played an important role in the recovery after the 2001 earthquake in Bhuj, Gujarat. With her post-Gujarat earthquake experience, she emphasised that unless there was a system in place to streamline this inflow of support, there would be disastrous consequences adversely impacting the post-disaster rehabilitation activities.

This paved the way for the establishment of a coordination centre established by prominent NGOs SIFFS and SNEHA and supported by the district administration. Establishment of the NCRC (NGO Coordination and Resource Centre, Nagapattinam) was thus a unique effort that ensured appropriate, equitable and sustainable post disaster response during relief and rehabilitation. Establishment of such a coordination centre as a partnership with the District Administration (with the UNDP later joining in and providing funds) helped in providing credibility as well as ensuring that the rehabilitation and recovery process was inclusive to a large extent.

- During the relief phase, this platform was mainly used for logistics support in streamlining the supply of relief material based on the emerging requirements, relief centre-wise. The geographical placement of the NCRC platform within the Collectorate not only provided the required credibility to the platform but also ensured easy flow of information between all the players and stakeholders making coordination during the relief phase hugely successful, relevant and timely.
- During the rehabilitation phase, the coordination platform ensured sector-specific planning such as:
    - Amicable distribution of areas to NGOs/ CBOs interested in setting up of temporary shelters. Discussions were held on the principles of reallocation of habitations, types of constructions most suitable for a multi-disaster resistant settlement,
    - Livelihood re-establishment: replacement of assets lost, immediate income generating activities, inclusion, gender related issues etc.
    - Ensuring consensus on the approaches adopted and the practices followed by all NGOs/ CBOs so that the interventions are appropriate, feasible, sustainable, equitable and inclusive.

3.5. Managing Data and Information

By 2004, computer usage and access to the internet and the use of mobiles had become quite extensive. Emails were preferred for communication as they were literally instantaneous and it became acceptable to put information on websites for wider access apart from ensuring a degree of transparency and rapid information transmission. SIFFS started a website on the Tsunami, http://tsunami2004-india.org which became the central place for all postings on tsunami work by SIFFS and associated organisations. The reports of meetings, some articles, important Government Orders, a lot of disaster-related photographs, the names of 'Registered NGOs', advisories on engine costs etc. were made available from Nagapattinam. Subsequently, the NGO Coordination and Resource Centre (NCRC)'s website http://ncrc.in/ carried information on advisory group meetings, workshop reports and various publications which ranged from compilation of the various government orders classified according to the sector they addressed (and translations of the orders into Tamil) as well as profiles of NGOs working in the area.

The Tamil Nadu government's website http://www.tn.gov.in/tsunami/ was where they posted regular updates on the tsunami relief packages. The website continues to be active even today. The district websites, especially Cuddalore

(http://www.cuddalore.tn.nic.in/tsunami/Tsunami/) had detailed lists of damages and beneficiaries for the various packages; and even direct contact numbers and email ids for the district administration and elected representatives.

The power of IT support was very clear in the relief phase itself when it was realized that a lot of the assistance being sent was supply driven and not demand based. In Nagapattinam, for example, large quantities of clothes, usable and useless came in from various sources. Large amounts of cooked food was available, so much so that hotels had to close down for lack of business. There was a requirement for water, medicines, underclothes, sanitary napkins and such. So, volunteers from SIFFS and SNEHA were organised into groups with co-ordinators for each geographic area to gather the requirements at each relief camp and send it to the co-ordination centre at Nagapattinam Collectorate. The volunteers and the co-ordinators would assemble every night at the Collectorate, bringing in the requirements from all over the district. By the morning these would get entered into the computers and matched with availability. The assistance wherever possible would be sent immediately or kept in the pending list. The government appreciated this effort and within three days of this mechanism being in place, the government responded by giving the NGO coordination centre the control of the movement of relief materials from the government godowns. Bhoomika an NGO, sourced mobile phones for the volunteers and the daily meeting was done away with. The volunteers in the field would call up as and when the requirements came up and these would immediately get entered into the machines and the volunteers at the godowns would get the list of requirements many times a day. Thus, IT support meant organized help was enabled.

Tsunami Rehab Information Network (TRINet) was set up as an apex body for district-level information centres that were involved in providing information on tsunami rehabilitation. Realizing the extent of media coverage on the tsunami, a weekly news round-up of all news in the electronic media as well as reports of (coordination) meetings held in different places was sent out to a large number of recipients including NGOs, government officials and civil society in general and was also made available on the website. TRINet also took the initiative of covering meetings especially in Chennai and provided quick reports on discussions that would not get covered by the mainstream media on their website (www.trinet.in). TRINet organized a number of thematic workshops including on coastal environment, shelter reconstruction, governance and sanitation systems where government departments, NGOs, CSO, academic institutions and members of society at large participated on a neutral platform especially for sharing information and understanding field issues. The detailed workshop reports helped in understanding the cross-cutting issues that dominated the rehab-recovery process.

Box 3.6

Lessons learnt (regarding coordination)

- Need for Perfect Coordination / Cooperation at every level.
- Assessment of Needs.
- Assessment of Resources available –
- Transparency in operations.

- Unbiased Feedback.
- Keeping the Channels of Communication open at all times - Web site, emails, phone, fax, daily meetings / briefings / clarifications.
- MUTUAL TRUST - MOST IMPORTANT.

CV Sankar, OSD (R&R) ppt at CARE meeting 21.12.05

3.6. Missions and Projects for Recovery

The first mission to assess the damage due to the tsunami and assess needs for recovery was carried out as a joint activity between the World Bank, Asian Development Bank and the United Nations. From the point of view of external support to the State for recovery, there were three sources of assistance as detailed in the Table 3.1.

Table 3.1: External Support for Tsunami Rehabilitation

Agency	Fund	Time Frame	Project	Sectors
World Bank	USD 423 Million (Rs 1852 crores	3 years	ETRP – Phase I (Emergency Tsunami Reconstruction project)	• Housing Reconstruction (US$596.8 million, about 87.5% of total) • Restoration of Livelihoods (US$36.4 million, about 5% of total) • Public Buildings and Public Works (US$19.5 million, about 3% of total) • Technical Assistance and Training (US$11.1 million, about 1.5% of total) • Implementation support (US$19.0 Million, about 3% of total)
			ETRP – Phase II	Vulnerability Reduction of Coastal Communities
Asian Development Bank	USD 143.75 million (or Rs. 629.93 crore)	3 years	Tsunami Emergency Assistance Project	• Restoration of livelihoods • Transportation such as roads and bridges, ports and harbours • Rural and municipal infrastructure such as water supply and sanitation, municipal infrastructure, rural infrastructure • Capacity building and implementation assistance
International Fund for Agricultural Development	USD 30million (Rs 129 crores)	8 years	Post Tsunami Sustainable Livelihood Programme	• Community resource management, • community institutions, • micro and rural • finance • microenterprise development
Japan Fund for Poverty Reduction/ ADB	USD 3.7 million (Rs 16.7 crores)			Alternative Livelihoods, Fish breeding etc.

4. FISHERIES

4.1. Fisheries as a livelihood

The family in a fishing community acts as a single economic unit. Both men and women are active though their focus is different. Men are largely into the harvest aspect of fisheries while women deal with the post-harvest activities. This is very clear from the data generated by the fisheries census (Figures 4.1a & b). It may be noticed that there is a larger distribution of employment activities with respect to women compared with the men who are largely only into fishing.

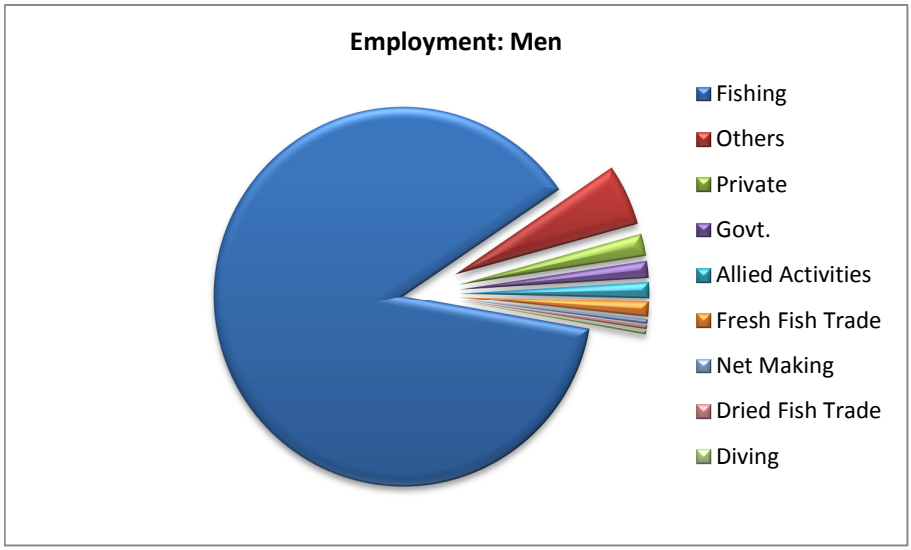


Figure 4.1a: Employment Diversification – Men

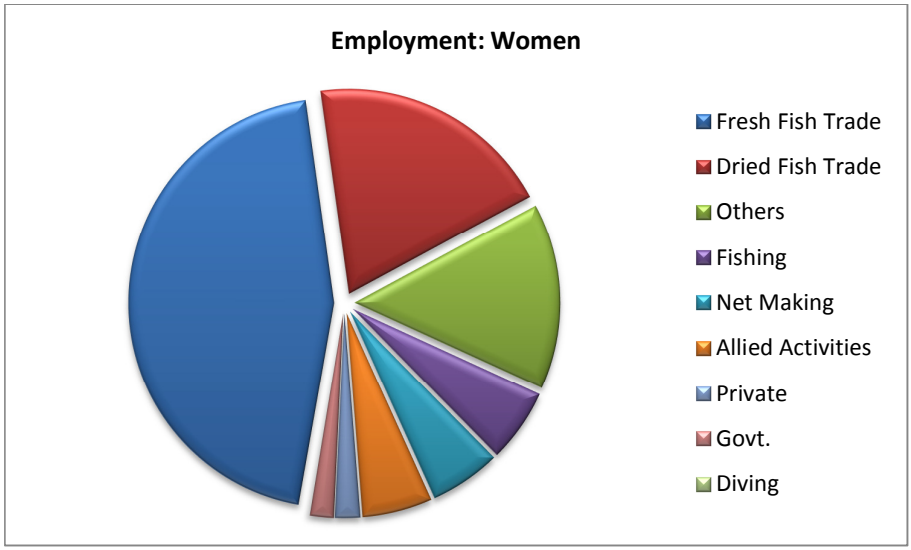


Figure 4.1b: Employment Diversification – Women

4.2. The fishing fleet of Tamil Nadu before the tsunami

Till the 1950s, the fleet was largely made up of traditional craft, using nets made of cotton and natural fibre. In the 1960s, the introduction of the nylon nets and the mechanized trawl boats resulted in the growth of the export segment. In the 1970s, international prices for shrimp resulted in a trawler boom and increased conflicts between the artisanal and mechanized sectors. It was only in the 1990s that motorization picked up. The years before the 2004 tsunami also saw falling catches and a crisis in the trawl sector resulting in multi-day fisheries and the increased use of banned gears. Figure 4.2 gives the overall district-wise distribution of fishing craft. Table 4.1 and Table 4.2 give the detailed break-up of district-wise distribution of craft and gear respectively according to the 2000 TNMF Census.

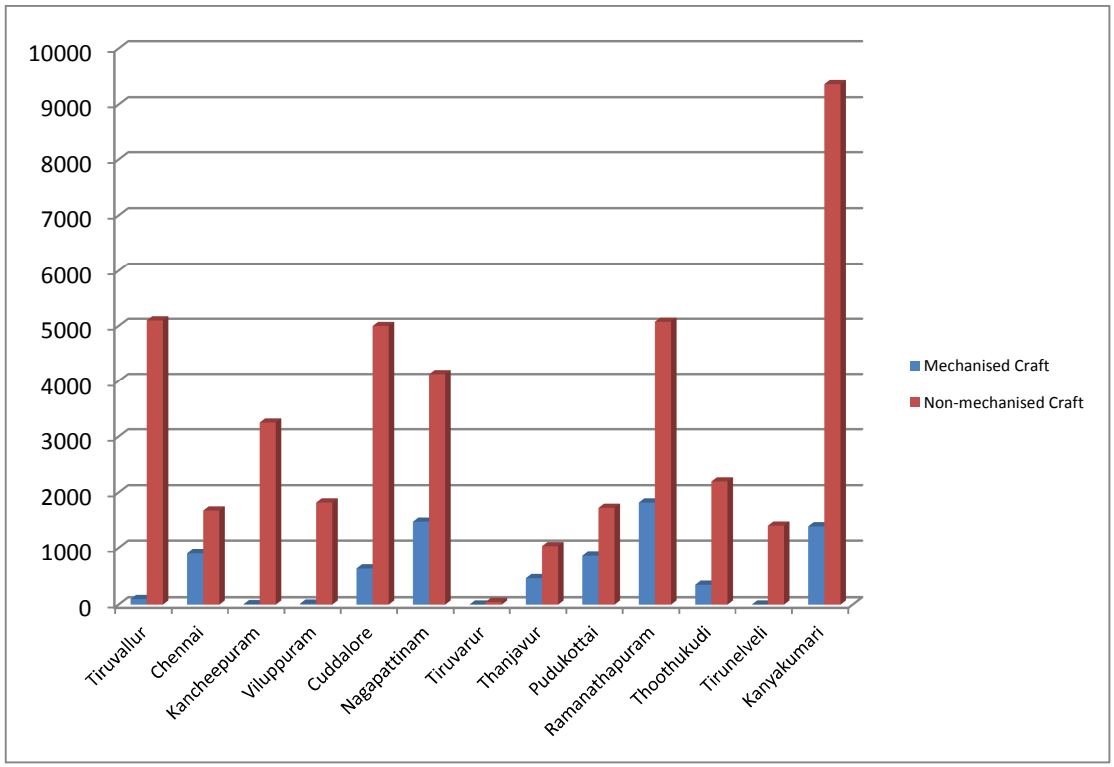


Figure: 4.2: Distribution of mechanised and non-mechanised craft in Tamil Nadu

As may be seen, the non-mechanised sector dominates over the mechanised sector.

Table 4.1: Distribution of Craft across the TN Districts (TN MF Census 2000)

			make			type				make			type						engine	
	District	number of fishing villages	**Wooden**	**FRP**	**Steel**	**Trawler**	**Gill netter**	**Liner**	**total**	**Wooden**	**FRP**	**Plywood**	**Masula**	**Vallam**	**Dugout Canoe**	**Catamaran**	**Total**	**IBE**	**OBM**
1	Tiruvallur	58	98	0	0	95	3	0	98	4929	161	11	53	1942	68	3038	5101	22	819
2	Chennai	44	903	5	0	855	53	0	908	1601	61	0	6	2	0	1654	1662	2	249
3	Kancheepuram	44	7	0	0	7	0	0	7	3111	106	33	12	86	4	3148	3250	0	1536
4	Villupuram	19	17	0	0	17	0	0	17	1434	370	0	9	0	0	1797	1806	0	694
5	Cuddalore	49	417	223	0	372	268	0	640	4542	758	0	12	88	288	4612	5000	0	722
6	Nagapattinam	51	1444	21	0	1411	54	0	1465	3602	467	60	0	160	73	3896	4129	16	2536
7	Tiruvarur	13	0	0	0	0	0	0	0	46	1	0	0	47	0	0	47	1	
8	Thanjavur	27	469	0	0	469	0	0	469	1030	1	0	0	924	0	107	1031	3	0
9	Pudukottai	32	866	0	0	866	0	0	866	1708	2	0	0	1572	45	93	1710	88	6
10	Ramanathapuram	184	1804	0	0	1802	2	0	1804	5078	0	0	0	4290	55	733	5078	1121	0
11	Thoothukudi	21	267	85	0	267	81	4	352	2078	61	58	0	955	0	1242	2197	868	1097
12	Tirunelveli	7	0	0	0	0	0	0	0	1358	19	18	0	37	0	1358	1395	0	1188
13	Kanyakumari	42	1372	0	11	759	186	438	1383	5708	74	3584	0	3770	0	5596	9366	22	4116
	Total	591	7664	334	11	6920	647	442	8009	36225	2081	3764	92	13873	533	27274	41772	2143	12963

Table 4.2: Distribution of Fishing gear across the TN Districts (TN MF Census 2000)

	District	number of fishing villages	Gillnet	Trawlnet	Shoreseine	Boatseine	Longline	Trap	Others	Total
1	Tiruvallur	58	8185	149	12	0	1363	4306	22614	36629
2	Chennai	44	5878	1827	43	255	672	0	743	9418
3	Kancheepuram	44	7506	40	56	459	1059	135	1036	10291
4	Villupuram	19	10469	54	21	0	835	0	98	11477
5	Cuddalore	49	53355	992	368	28	238	0	1006	55987
6	Nagapattinam	51	27111	2614	1116	439	289	471	612	32652
7	Tiruvarur	13	18723	0	194	267	18	352	35	19589
8	Thanjavur	27	24692	771	970	283	926	43	5347	33032
9	Pudukottai	32	26073	3979	124	1	1109	61	782	32129
10	Ramanathapuram	184	62046	6248	448	147	8895	2754	8309	88847
11	Thoothukudi	21	30170	602	90	2	9353	0	1976	42193
12	Tirunelveli	7	21062	0	0	276	5927	0	1388	28653
13	Kanyakumari	42	14954	1640	190	0	5851	768	1332	24735
	Total	591	310224	18916	3632	2157	36535	8890	45278	425632

This is the background data against which the impact of the tsunami and the recovery efforts need to be examined.

4.3. Damages

As reiterated a number of times, it was the fisheries sector that suffered the most visible damage in terms of lost and damaged craft. The scenes of damaged boats strewn well inland, smashed/overturned craft in the Chennai harbour and the completely destroyed harbour of Nagapattinam have been well documented.

Nagapattinam Harbour (NCRC)

Fishing gear, especially nets, and engines of crafts were also damaged in the disaster. There are different versions of the extent of damage to the fishing craft. An initial damage assessment as given in Table 4.3 with a more detailed damage assessment in Table 4.4 from the Fisheries Department.

Table 4.3: Details of Initial Damage Assessment: Lost and Damaged Property: Boats.

	Catamarans		Vallams	Mechanized boats	Fishing Nets
	wooden	FRP			
Tiruvallur	516	570			2888
Chennai	1493	169		568	2992
Kancheepuram	1994	784	19	8	2873
Villupuram	1691	1017		26	3223
Cuddalore	5530	862		505	4935
Nagapattinam	6144	0	1761	869	7604
Tiruvarur	0		19		19
Thanjavur	47		232		522
Pudukottai	191		473	30	2342
Ramanathapuram	0		290		180
Thoothukudi	644		600		2203
Tirunelveli	1285		82		1160
Kanyakumari	6582	0	694	385	7236
	26117	3402	4170	2391	38177

(Source: Extracted from the table on page 16. "Tiding over tsunami", Government of Tamil Nadu, 2005.)

Table 4.4: Detailed damage assessment of Fishing Craft and Gear

	catamarans		vallams		mechanized boats			
	partly damaged	fully damaged	partly damaged	fully damaged	partly damaged	fully damaged	nets (metric tonnes)	engines
Tiruvallur	0	2880	0	19	0	8	88	0
Chennai	1300	1085	4	13	520	570	116.9	313
Kancheepuram	145	2622	0	135	0	0	73.53	0
Villupuram	0	3248	0	27	0	29	504.35	0
Cuddalore	565	3700	78	668	361	364	548.31	580
Nagapattinam	341	6582	239	4405	353	983	576.85	341
Tiruvarur	7	0	12	0	0	0	6.54	3
Thanjavur	47	0	232	0	127	127	52.12	17
Pudukottai	192	89	402	188	59	59	35.32	19
Ramanathapuram	0	0	260	2	9	10	0.31	0
Thoothukudi	666	3	698	1	0	0	77.85	63
Tirunelveli	620	767	196	254	0	0	50.36	134
Kanyakumari	264	10407	857	2428	346	505	69.55	90
total	4147	31383	2978	8140	1775	2655	2199.99	1560

(Source: Fisheries Department: http://www.fisheries.tn.gov.in/tsunami-main.html accessed February 11, 2015)

4.4. Response

The government responded by announcing specific relief packages tailored to the fisheries sector, especially for damaged and destroyed craft. A snapshot of the relief packages is given in Tables 4.5 and 4.6. As may be seen, Rs 1476 million was disbursed as subsidy/relief towards fishing implements with a large proportion going to damage of catamarans.

Table 4.5: Relief Packages announced by government for repair/replacement of fishing craft and gear

Sl. No.	Details	Partly Damaged	Fully Damaged
1	Catamarans Wooden / FRP	Rs.10,000/- or the assessed damage value which ever is lower	Rs.32,000/- (Inclusive of Net)
2	Vallam Wooden / FRP	Rs.15,000/- or the assessed damage value which ever is lower	Rs.75,000/- as subsidy and Rs.75,000 as loan (Inclusive of Engine & Net)
3	Mechanized Boat	60% of the damage value as subsidy subject to a maximum of Rs.300,000 and remaining 40% of the damaged value as loan.	35% of the current replacement value of the craft as subsidy subject to maximum of Rs.500,000 and the remaining 65% of the replacement value as bank loan.
4	Engines	Repair / Replacement Rs.5,000/-	
5	Nets	For Catamarans – Rs.10,000/-For Vallams - Rs.20,000/-	

Source: http://www.fisheries.tn.gov.in/tsunami-main.html accessed February 11, 2015

Table 4.6: Relief Assistance disbursed to damaged fishing implements

Sl. No.	**Categories of damaged fishing implements**	**Details of assessment(Nos)**			**Relief assistance disbursed(Nos)**			**Total subsidy amount disbursed (Rs. in Millions)**
		Partly	**Fully**	**Total**	**Partly**	**Fully**	**Total**	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1	Catamarans of all types	4147	31383	35530	10610	15630	26240	444.235
2	Vallams of all types	2978	8140	11118	6764	1238	8002	175.485
3	Mechanized Boats	1775	2655	4430	2009	368	2377	479.980
	Total	**8900**	**42178**	**51078**	**19383**	**17236**	**36619**	**1099.700**
4	Nets	2200.1	..	..	..	..	38800	360.780
5	Engines	1560	..	..	2776	..	2776	13.880
	Grand Total	**..**	**..**	**..**	**..**	**..**	**..**	**1476.360**

Source: http://www.fisheries.tn.gov.in/tsunami-main.html accessed February 11, 2015

4.5. The damage and assessment process

4.5.1. Damage Assessment

The first round of damage assessment was done by the villagers themselves. The district administration divided the whole district into different zones and an IAS officer was responsible for each zone. The damage assessment was also reported through this system; these were the most accurate figures of the damage.

Still recovering from the shock of the disaster, a meeting held at the office of the district collector did discuss on ways to move ahead. Village leaders were invited to the meeting. The discussion led to matters of livelihood. The fishery livelihood was almost fully destroyed. The idea of repairing the damaged boats and engines first in order to resume fishing was mooted at this meeting.

4.5.2. Early response: Repairs of Boats and OBMs

Following the meeting on 8th January at the Collectorate, SIFFS came forward to set up repair centres in Nagapattinam. The organisation had to its advantage the experience of running boat production centres and engine repair units along the West Coast. It had also set up its first boat production yard in Tarangambadi in Nagapattinam district before the tsunami. However, the long tail engines used on the east coast was new to them and repairing them posed a challenge.

The first camp was set up in Arcattuthurai village near Vedaranyam. “The first step in setting up a repair centre in any village was to convince the traditional panchayat” says Belgin who coordinated the setting up and operations of repair centres. Fishermen had apprehensions; there were rumours that new fishing units would be given to replace all the damaged and lost ones and that if they were repaired, that would cancel out the possibility of compensation.

SIFFS tried convincing the fishermen arguing that replacement if at all happened, would take a long time, and that resuming fishing would be easier if the units were repaired.

SIFFS selected Arcattuthurai because the organisation already had a presence there through a fish marketing society set up before tsunami and the village was in agreement with the proposal for repairs. Experienced technicians and supervisors were drawn in from the existing boat yards of SIFFS to form a team. Tools and appliances were brought to the site and repair shed was erected with the support of the villagers. The village provided space, electricity, and volunteers for unskilled labour.

Based on an initial assessment of the state of the damaged boats, SIFFS fixed Rs 20,000 as the upper limit for expenditure on repairing a boat. Repairs soon went underway and fishermen from Arcattuthurai used repaired boats to venture into the sea in a demonstration to propagate the idea of resuming fishing operations.

Even though things went on smoothly in Arcatthuthurai, there were problems in other areas. Some of the villages objected to the idea of repair under the pretext of the possibility of

getting new boats as replacement. Eventually the district collector issued a letter clarifying that repairing of boats would not lead to denial of entitlement for replacement of fishing units. Following this, the next repair centre was set up in Seruthur village, and more centres followed.

Setting up and running repair camps posed serious logistic issues those days, in the aftermath of such a large disaster, according to the people who were involved in the operations. Spare parts and materials had to be transported to all the running centres on a day to day basis. "Free mobile phones provided by a Chennai based organisation[4] helped us a lot in coordinating activities across villages" remembers Belgin. "Another advantage was that the technicians stayed at one place after closing the work for the day. This also helped in improved coordination and sharing".

In order to repair long tail diesel engines, SIFFS hired technicians locally and sourced in spare parts from local suppliers. In some places boat and engine repair centres were set up at the same location while in some others these were in different locations.

SIFFS repair centres repaired 505 damaged boats in 18 villages and 632 engines in 22 villages in Nagapattinam. Forty eights boats were repaired in a repair centres set up in Cuddalore and 17 boats were repaired in Karaikal district of Puducherry. The massive programme with huge deployment of human resources came to a close as distribution of boats and engines started in a big way as part of the rehabilitation programme.

In Kanyakumari, at the insistence of Mr Vivekanandan, chief executive, SIFFS started repairing damaged engines and boats in Kanyakumari villages. The first repair camps started functioning as early as 15 January. Unlike on the East Coast, fishermen used the repaired boats and engines in Kanyakumari district. Even after getting new fishing units, many fishermen continued fishing using the repaired units.

South Indian Federation of Fishermen Societies
Livelihood Restoration Programe – Nagapattinam District
Status Report – 02.03.2005 at 6PM

Repairing of boats

Sl no	Repairing Centre	No. of Boats registered for repair	No. of Boats repaired	No. of Boats work in progress	Remarks
1	Arcattuthurai	64	64		Centre closed
2	Pusphavanam	42	37	0	Centre closed
3	Thirumullaivasal	35	35	0	Camp closed
4	Seruthoor	100	73	2	
5	Chinnankudi	36	35		Centre closed
6	Perumalpettai	28	29		Centre closed
7	Naiakkarkuppam, Madathukuppam Puthukuppam	2 8 15	5		
8	Keezhamoovarkarai	37	28	4	
9	Kodiakkarai	34	24	14	Villagers will organize the local technicians and SIFFS will provide materials
10	Periyakuthakai	10	7		Centre closed
11	Kuttiyandiyoor	26	4	2	
12	Kilinjalmedu (Karaikkal)	25			Registration completed
13	Puthupettai				Agreed to start work
14	Chinnoorpettai				Agreed to start work
	TOTAL		**341**	**22**	

[4] Bhoomika Trust

Snapshot of Boat Repair sitrep at Nagapattinam

South Indian Federation of Fishermen Societies

Tsunami Disaster Relief Activities in Kanyakumari District

Status of Engine Repair

Place	Long tail	OBM	Total
Melmanakkudi	67	130	
Melmuttom		108	
Vavathurai	83		
Sahayamatha Street	30		
Alikkal	20		
Colachel (Covering Mandakkad Puthur, Katiyapattinam, Chinnavilai, Periyavilai)		67	
Koottappally		42	
Covalam	07		
Total	207	347	554

New centre to open at Kurumpanai soon. Other centres planned are at Arockiapuram, Kizha Muttom, and Pallom.

Craft Repair Status

Place	Long tail
Melmanakkudi	26
Melmuttom	90
Colachel (Covering Mandakkad Puthur, Katiyapattinam, Chinnavilai, Periyavilai)	32
Kanyakumari	35
Arockiapuram	42
Total	225

Snapshot of Engine and Boat Repair sitrep at Kanyakumari (22 Feb 2005)

In hindsight, was it useful, considering the fact that new boats were distributed at such a large scale across the coast? "It had its own relevance", says X. Joseph, the current deputy chief executive of SIFFS, who headed the repair operations after tsunami. There were NGOs that took a cue from SIFFS's efforts in repair and therefore revised their plans to distribute large number of new fishing units. CBM working with St Joseph's Eye Hospital in Poompuhar and Kizhamoovarkkarai villages significantly changed their plan, for instance, and focused more on repairing the units rather than replacing. Early resumption of fishing was also facilitated by the repair programme. "SIFFS also used the programme as a platform to talk against reckless distribution of fishing crafts, though hardly heeded by the stakeholders", says S. Ephrem, former chief executive, SIFFS.

4.5.3. Back to the Sea…

Along the east coast, braving the lukewarm response by the disaster-hit fisher folks, the South Indian Federation of Fishermen Societies (SIFFS) set up its first camp to repair fishing crafts in Arcattuthurai, a village near Vedaranyam. It was from Kodiakkarai, the southern tip of Nagapattinam district that a few fishermen went fishing for the first time after tsunami. This was in late February 2005 and the fishermen were the Dalit crew members fishing on Ceylon boats owned by Mudaliars, a farming community. A symbolic action of resuming fishing

came from Arcattuthurai, where fishermen using boats and engines repaired and nets provided by SIFFS went to the sea, marking a ceremonial occasion attended by the then Deputy Collector of the district Dr Umanath. The deputy collector and several officials of the district administration and SIFFS staff members accompanied the fishermen to the sea. The event had significance in addition to its symbolism. Two rival factions of the village, who had been engaging in bitter feuds over the years, went together to the sea.

Alas, it did not last for very long. Following Kodiakkarai and Arcattuthurai, villages such as Seruthur and Velankanni in Nagapattinam had resumed fishing operations when word spread that those who were already back to fishing would not get compensation for the losses. This led to a stoppage of fishing across the district for a few days. There were efforts to suspend fishing for a longer period, mainly orchestrated by the large scale fishermen of Akkarappettai.

In Kanyakumari, the tsunami, with its stealth and fury and the destruction that it caused, created a gripping fear among the fisher people. Collecting dead bodies strewn around on the beaches, mass burial, orphaned children, and young widows – all these were unprecedented for even the older generation. Even after the mass burial, dead bodies were recovered. There was premonition in the air; a presentiment of some other misfortune looming in the horizon. Rumours spread across the villages added to this. One such rumour of new waves smashing the coasts led to hundreds of people fleeing a funeral service leaving the dead body behind.

People even refused to go near the sea or look at it. The image of the sea as the mother of fishing communities had taken a beating. People started looking at the sea with fear.

Hundreds of people were still in relief camps even as others were being shifted to temporary shelters. “Nobody was sure about what was happening in the present; not to talk about future”, said Devadas when asked about the discussions among the people those days about the way ahead.

“It was Vivek sir who spoke about resuming fishing for the first time”, said Mariadas, referring to V. Vivekanandan, the then chief executive of SIFFS. “When he first said it, we thought it was inopportune to say that. But then he insisted and maintained that resuming fishing was the only way to get back to life. And we listened”.

The Bishop of Kottar Diocese took out a ‘blessing journey’ through the sea to exhort people to get back to sea and to resume fishing. This helped in reducing the fear in people’s mind. Finally, it was from Mele Manakkudi village that a few fishermen went to the sea with hook and line for fishing. Hook and line because nets were all gone; there were boats and engines that escaped undamaged though.

There was another reason probably for the men of Manakkudi to go first to the sea. After the first set of waves, some of them had swum into the sea trying to recover a few of the boats that they saw had been washed away from the beach by the waves. When the second wave hit they were at the sea. Therefore these men believed that they were safer at sea in case of another tsunami. This belief helped overcome fear.

"Another factor that encouraged fishermen to get back to the sea was they did not have cash at hand for anything at all" said Christudas of Marthandamthuram, another employee of KDFSF[5]. Food and other essentials were being supplied at the relief camps, yet there was no money. Men found the state in which they were in too restraining to cope with. "There was no money even for a drink, and this was one of the factors that pushed them back to sea".

Fishing in Fear

The first set of boats that went fishing came back with little catch. Men went the next day again, but there was hardly any improvement in fish catch. Some people tried spreading rumours that tsunami had washed away all the fishes; even that another disaster was likely soon. Fabricated doomsday stories spread among the communities very fast during those days. "When people are in camps, stories spread faster; especially the bad ones".

In spite of the rumours and discouragement, fishermen went again and again for fishing; with every passing day more and more people joined them. When SIFFS repaired boats and engines and distributed nets, more fishermen resumed fishing. Catches continued to be low for several months whatsoever.

4.5.4. Large scale distribution of boats

Even before the tsunami, it was believed that the fisheries sector was in a crisis situation. In fact the last major natural calamity before tsunami was the 1977 cyclone, remembers Rajendran Nattar of Keechankuppam, one of the large fishing villages in Akkarappettai area of Nagapattinam in the aftermath of which, FRP boats were first introduced in Nagapattinam. He pointed out that fish catches were already stagnating by the early 2000s along the east coast. Around 20-30 species that had been aplenty in the inshore waters were disappearing from the catches. By 2002, there was gloom among the fisher folks; a premonition that the future of the fishery was perhaps bleak. People used to comment that the only use that their wooden trawler boats had, would be for use as firewood, if dismantled. It was in this context that an all India research organisation conducted a one-day conference in Nagapattinam. The conference highlighted industrial pollution and a few other factors as reasons for low catches and suggested that deep sea fishing was the only way out. Poor catches continued till tsunami, when the entire fishery of the district was destroyed at a go. And as part of the relief process, a large number of NGOs and other humanitarian agencies entered the fray. There was a sense of desperation in the response – at any cost send the fishermen back to sea and restore their livelihoods. The fastest way was to distribute boats quickly in large numbers.

"For NGOs that entered the region with good intentions but without any experience or knowledge of marine fisheries, distribution of boats and engines to fishermen was an easy way of doing rehabilitation. That these were tangible deliverables added to its attraction", says Joseph, the deputy chief executive of SIFFS. "It was those boats distributed by NGOs that first took on to ring seine fishing, and later got converted as investments in larger units", says Lachmanan, a small scale fisherman of Karaikalmedu village.

[5] Kanyakumari District Fishermen Sanghams Federation

A sample beneficiary list (NCRC)

The experienced and the discerning, noticeably from the leadership of SIFFS, had warned against uncontrolled distribution of fishing units. They had cautioned that the rehabilitation should not be turned into an opportunity for upgrading technologies and expanding fleet. They had also pushed the repair programme for boats and engines in order to reduce the chances of over-distribution.

“But it did not work” says Joseph. NGOs went around distributing boats. Adds Nadumaran of Tarangambadi: “There were NGOs that were on the lookout for small villages so that they could distribute boats to all the fishermen of the village”.

Someone, in that hopelessly chaotic phase of rehabilitation had quipped that giving a boat to every fisherman in a village would be akin to giving a football to every player in a match. Well intentioned NGOs also fell into the trap of trying to translate the agrarian logic of ‘land to every farmer’ to fishery without trying to understand the nuanced complexities of a sector which was new to them.

“The first set of boats for distribution came from Marakkanam”, remembers Belgin, the head of boat production services at SIFFS. Then started the inflow of boats of throw-away quality, rolled out from the umpteen local boat production units that mushroomed across the coast, trying to make some easy money out of the new opportunity.

Tsunami boats: Nagapattinam (left) Pudupattinam (right)
(Photo: Phil Townsley/FIMSUL)

Another farcical effort was net distribution by NGOs, which was done by sourcing what they understood as 'net' in large volumes from suppliers and distributing them to the fisher folks. Fishermen took it too; knowing very well that they could never use them; some of them tried selling it in local shops but to no avail.

SIFFS, in its efforts to help the communities resume fishing, distributed nets. They used a unique method in which tokens were distributed to fishermen, who could then use the tokens to select the mesh of their choice, rope, floats, weights, and other accessories within the limits of a maximum amount fixed per fisherman, and set their own nets for fishing. The selection of nets at the shops was also supervised by the community development organisers of the organisation. This method was found to be very effective.

"Initially everyone was interested in distributing boats. Later when the issue of replacing nets was brought up, NGOs went ahead buying and distributing nets. These nets were of no use to fisherman" said Mariadas, chief executive, KDFSF, about the situation in Kanyakumari.

"Only fishermen understand their requirements for nets" said Jude Varghese from Vallavila village. NGOs understood nets as a standard material, which fishing nets are not. "Even Kottar Social Service Society of the Diocese did the same mistake in spite of years of experience in working with the fishing communities. They distributed nets which were of no use".

KDFSF and SIFFS adopted a different strategy. Based on an estimate they fixed an upper limit for the amount every fisherman could spend. The fishermen were issued tokens, which they could exchange at shops selling net and accessories to buy materials within the upper limit as per their requirement and choice. This helped fishermen in buying the required materials and setting their nets as per their specifications.

"This is the only way in which distribution of fishing nets could work" said Mariadas.

Box 4.1

Redistribution in Tarangambadi

In Tarangambadi, a village in Nagapattinam district which had lost 316 of its people to tsunami, the traditional panchayat played critical roles during relief and rehabilitation stages after the disaster. The village in fact reconstituted its traditional panchayat more than once in an effort to place people who could interface with the NGOs better in the leadership, so that the village benefited more.

When the NGOs started distribution of fishing implements, the traditional panchayat leaders of Tarangambadi went around and met NGO functionaries and convinced them to donate more units to their village. "We had to beg to several NGOs to come in and contribute" says a former member of the Traditional Panchayat. Still they were not able to meet the targets that the village had set for itself.

The traditional panchayat pooled together all the materials and implements that the village got and put a price to everything. People were then encouraged to buy at the discounted price. The proceeds from the sale where then redistributed as per the traditional entitlements of each family known locally as 'Thalakkettu'.

In Kanyakumari, over supply of fishing implements by agencies led to wrong impressions and responses – some villages pooled in boats and engines together and redistributed. Redistribution of boats, engines and other implements in Kurumpanai, a large fishing village was an example. The village committee (of the church) received all the implements and distributed to the people through neighbourhood groups called Anpiums.

The distribution was equitable; but it overlooked the real losses. People shared whatever that came into the village; but there was no special treatment of those who had lost their implements.

"But then, how was this possible? When there were those who had really lost their fishing units, how could this 'equitable sharing' address their loss?"

This model worked effectively in villages with low damages and losses – for instance Kurumpanai – there were no significant losses, therefore whatever the village got could be shared among the families in the village. In village that had serious losses, people who had lost the units were compensated for; redistribution was of what the villages got over and above these.

"In Kanyakumari, NGOs adopted villages and did all the rehabilitation work including steps needed for reviving livelihoods" says Mariadas. NGOs distributed fishing boats and engines based on surveys that identified those who had lost their units. The redistribution was of the excess materials and implements.

"The process however left all the villages with more FRP boats than what were there before the tsunami" says Christudas of Marthandamthurai village. "There were those who were left out in the process; then there was excess distribution as well" adds Mariadas. If 1% of those who had really lost were left out without getting compensated for, at least 25% more people than those who had lost benefited by getting new fishing units. "These errors were there in the disbursement of compensation by the government too" said Sundar from Covalam. In this

case political considerations too crept in and data was manipulated, according to the participants of the meeting[6].

4.5.5. The Lost Kattumarams of the East Coast

The main fishing craft along the Coromandal Coast before tsunami was kattumaram – a simple craft made of tying together – in a peculiar design though – of Albizzia logs. The speciality of a kattumaram was that it would never sink in water.

Kattumarams in Villupuram District (Photo: Phil Townsley/FIMSUL)

Fishermen as well as district level functionaries were unanimous in their opinion that most of the kattumarams were either destroyed or damaged by the tsunami. Kattumarams were not easily available either. "SIFFS first thought of making kattumarams in Kerala and sending them to Nagapattinam" said Selvadas who worked in the rehabilitation team of the organisation after tsunami.

Soon the organisation realised the impracticality of the proposal as the kattumaram used on the East Coast was different from those on the West Coast in design. SIFFS set up a kattumaram production centre near its boat yard at Tarangambadi in Nagapattinam; sourced Albizzia wood from Kerala and southern Tamil Nadu and started producing kattumarams. SIFFS produced hundreds of kattumarams at the facility and used them for sales as well as own distribution.

"Probably it was a desperate attempt to discourage inopportune technology upgrade and fleet expansion; it was also an effort in saving the traditional fishing craft of the Coromandal Coast" says Joseph, deputy chief executive of SIFFS.

"Our total production of kattumarams had crossed Rs 65 lakh over a short time" says Selvadas, who coordinated the kattumaram production for SIFFS. However, with the

[6] Meeting held to discuss ten years after the tsunami

subsequent distribution of FRP boats, kattumarams went out of use along the East Coast. Some of them are still used in estuaries in parts of Tamil Nadu.

4.6. Ten Years After

4.6.1. Increase in the fleet size

Large scale distribution of FRP boats and compensation packages clubbed with availability of credit led to a fishing fleet far greater than what existed before tsunami. Villages in general and smaller villages in particular got a large number of new boats; distribution went much beyond compensating for losses. Smaller villages such as Thazhampettai, Vellakoil, and Puthuppettai in Nagapattinam, which had FRP boats in the range of 20-30 before tsunami, presently had around 100 each.

The compensation package including those for death and lost fishing units caused high liquidity in fishing villages. This led to new investments in fisheries including buying of new ring seine units. Akkarappettai harbour now has more trawlers operating from there than the pre-tsunami level (Nine villages of Nagapattinam taluk operate from the harbour – these are Nagoor, Samanthampettai, Nambiar Nagar, Nagapattinam Aryanadu Theru, Keechankuppam, Akkarappettai, Kallar, Velankanni, and Seruthur). However, as per the census, the total number of mechanised boats has in fact gone down.

According to Tamil Nadu Fisherfolk Census 2010, the total number of fishing crafts in Tamil Nadu was 53206, of which 5320 were mechanised, 29,326 were motorised, and 18,560 were non-motorised. Table 4.7 below shows a comparative picture of 2010 and 2000.

Table 4.7: A comparison of the fishing fleet 2000-2010

	Fishing Fleet in 2000		Fishing fleet in 2010		
District	Mechanised Craft	Non Mechanised Craft	Mechanised Craft	Non-motorised Craft	Motorised Craft
Chennai	908	1662	466	89	1167
Tiruvallur	98	5101	0	2122	2686
Kancheepuram	7	3250	12	1607	2429
Villupuram	17	1804	4	942	1136
Cuddalore	640	5000	427	5538	1626
Nagapattinam	1465	4129	1054	0	6917
Kanyakumari	1383	9366	1062	18560	29326

Data: TNMF Census 2000, 2010

Figure 4.3 (with the non-motorised and motorised craft clubbed together as non-mechanized craft in 2010) shows the steep increase in the fleet size of the non-mechanized sector though a small decrease in the mechanised sector may be seen.

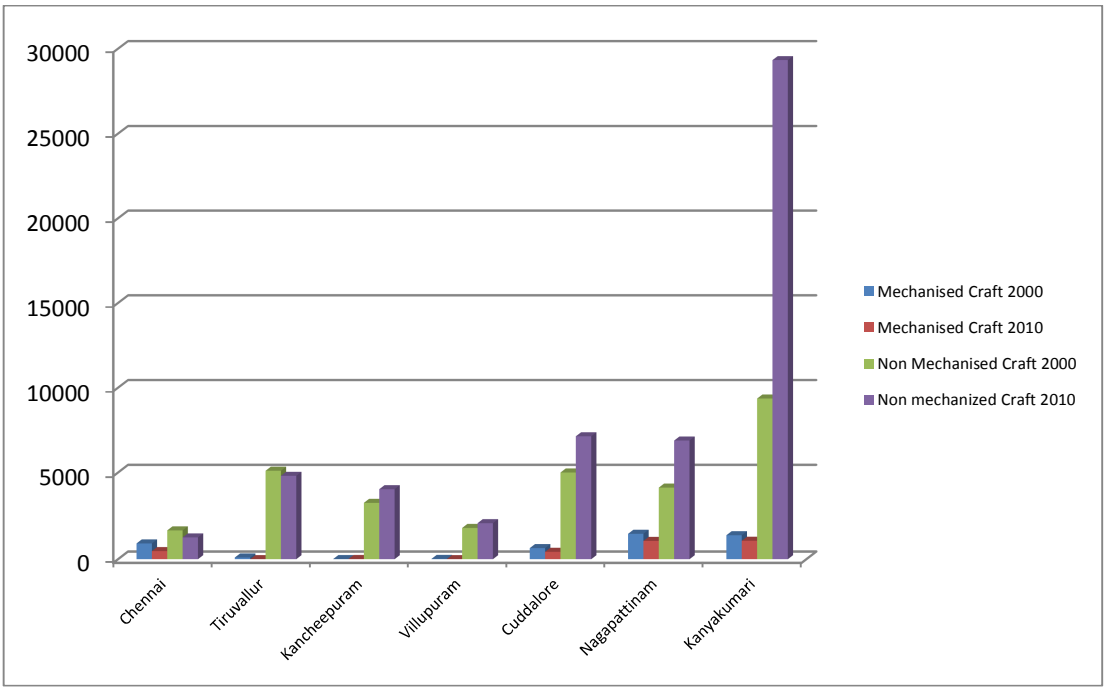


Figure 4.3: The fishing fleet – comparing 2000 and 2010 data

"This was a fishery dominated by kattumarams; extensive distribution of FRP boats after tsunami led to kattumarams being wiped out of the coast completely" says Lachmanan of Karaikalmedu. Steel boats of higher capacities driven by large engines of 200 to 250 hp were another development after tsunami. Introduced as trawling boats, these crafts however are used for multi-day gill net fishing in the deep sea also. There were 700 fishing boats operating from Nagapattinam harbour that went for deep sea fishing, seasonally. There were more than 500 trawlers that combed the inshore waters only.

Longer voyages by large and small crafts have been a post-tsunami phenomenon. Rajendran Nattar said longer voyages caused by new boats and engines had in fact led to a reduction in poaching in Sri Lankan waters and therefore a fall in the number of shooting events by Sri Lankan navy and arrests.

With inshore waters continuing to be fish-scarce, there were FRP boats boarded with two long tail engines venturing into deep sea fishing. Crew size in FRP boats had gone down from 4-6 to three. With an unprecedented rise in fish prices, fishermen were earning reasonably well.

"However, accidents are on the rise" he says. Most of the accidents were caused by FRP boats getting smashed at the new coastal structures by strong waves.

4.6.2. Workforce and Labour changes

The spread of ring seine has been a post tsunami phenomenon along the East Coast. A larger fleet size along with the spread of ring seine units which required 40-50 fishermen per voyage led to a situation where crew members were in shortage in many of the villages.

In Devanampattinam, a village on the outskirts of Cuddalore town, ring seine boats engaged immigrant labour coming in from inland farming communities. Labour relations have stabilised over years and this new labour is fairly well integrated into the system now. The immigrant crew members went out in support of Devanampattinam fishermen when they raised the demand for extending the length of breakwaters in Cuddalore harbour. Availability of immigrant labour has also encouraged splitting of existing groups to make investments in new ring seine units.

Integration of immigrant labour however, did not succeed in all places. In Koonimedu village in Viluppuram district, a village that ended up with a fleet of 85 FRP boats in place of the pre-tsunami level of 23-24 boats, attempts were made to engage labour coming in from the farming communities of Salem. This however, failed to stabilise and now all the fishermen engaged on boats are from the same village or neighbouring villages.

Another way the large FRP fleet responded to crew shortage was by reducing the number of fishermen that went on board. There had been a reduction from 4-6 to three men per boat. “The optimal crew size is four to six people; when you have only three men on board, fishing efficiency suffers” said Shekhar, president of the Grama Panchayat in Chinnoor Puthupettai village, Cuddalore.

“With the increasing demand for crew members, they have been able to push for changes in the sharing system” says Nadumaran, referring to the ring seine units in Tarangambadi and Chandrapadi in Nagapattinam. The earlier system was to divide the total amount in the ratio of 60:40 between owner and crew respectively after accounting for the expenses (diesel, rations, and crew allowance), reducing 10% owner’s allowance and another 10% for engine depreciation. The new system requires that the owner divides the total amount into 75:25 between them and the crew after deducting the expenses alone. This assures more incomes to the crew members.

Another response of the small scale fishery was to have the new genre of FRP kattumaram, which are small crafts with design similar to that of the wooden kattumaram. Two men can use this for fishing. This is mostly manually driven using oars.

FRP Kattumaram of the East Coast. The craft is used by one or two persons for small time fishing

Karaikalmedu village in Karaikal district of Puducherry, its fishermen with outstanding skills in hook and line fishing, has always been known for its fishery. Now with a large fleet size and a harbour at Karaikal, their voyages have become more and more into the deep sea. “Catches are good in deeper waters”, says Lachmanan, a former kattumaram fisherman from the village who now owns a FRP boat. Even with a larger fleet and advent of ring seine, Karaikalmedu does not have crew shortage. “We have expert fishermen from Kanyakumari working with us, as our catches have always been good”, says Thankaraj, a fisherman.

Tractor being used to pull a boat to the shore; an indication of labour shortage?

With the new harbour and higher incomes, educated youth are also into fishing these days, say the fishermen of Karaikalmedu. Educated men in the past used to look down up on fishing as an occupation. And they used to land in unenviable states with an inability to go fishing and lack of any other job opportunities. The stigma is no more there; educated youth are joining fishing on boats operating from the harbours.

4.6.3. Changes in Fishery

Changes in fishery brought in by the tsunami and the rehabilitation programme were not limited to larger fleet size alone; there have been several other changes in the way fisheries worked along the East Coast.

FRP boats using two long tail engines have started venturing in longer voyages and multi-day gill netting. This requires larger boats to support economically viable scales of operations. Therefore, there has been an increasing demand for larger FRP boats. In Villupuram, FRP boats are also using outboard Yamaha engines for higher speed.

When the ring seine boats are not in operation, the FRP boats used as carriers with them go fishing independently. In Koonimedu village in Villupuram district, this has led to new forms of investment as well. Groups of ten FRP boat owners come together and invest in ring seine units. During off season for ring seines, they go fishing independently on their FRP boats, with crew members who work with them on the ring seine units.

"Larger boats, better propulsion, larger nets, more hooks on longer lines", this was the way Rajan of Karaikalmedu put it. Two long tails engines of 10 HP has been emerging as a norm of sorts. Primary function of a second engine is to act as stand-by; but they are also used for extra power.

"Earlier we used to use 400-500 hooks on small lines; now the trend is to use long lines with say 3000 hooks", says Mahesh, a young enterprising hook and line fisherman of Karaikalmedu. Along with the steel boats, FRP boats are also into deep sea fishing; these boats even go to seas 300m deep (depth as recorded by eco sounders) and use 1300 fathom long nets for fishing from the deep waters.

Ideal crew size, according to the fishermen of Karaikalmedu, would be five men for hook and line and four to five men for gill netting. However, in villages with crew shortage, three men on a boat has become the norm.

Ring seine operations, it was reported by fishermen across villages, have led to depletion of inshore waters. Trawling near the shoreline adds to the problem. "While ring seines caught juveniles, trawlers in areas such as Mudassalodai where they use large nets with 100mX100m mouth left nothing in inshore waters" says Ravi, the president of fish marketing society in Chinnoor Puthuppettai village.

The depletion of fish resources is what forced fishermen into longer voyages and multi-day fishing. "That was what forced us; but then, returns are also good", says Mahesh. Fishermen says that the expenses per trip have gone up; but the returns were also good.

4.6.4. Ring Seine – A Post Tsunami Story

When ring seine fishing was first introduced in Pazhayar, fishermen from Devanampattinam took out their boats, went by the sea to Pazhayar, and burned 22 ring seines in the village. The action was meant to stop ring seines form operating in the area, as they thought it would destroy the fish resources. As it was an illegal fishing method, they thought their mode of protest was legitimate.

Today Devanampattinam, the village that responded so violently to the advent of ring seines, has more than 30 ring seine units operating from Cuddalore harbour. "The protest was under the pretext of ring seine fishing being destructive; but as ring seines any way started spreading, we also realised its earning potential" says Arul Das, a fisherman of Devanampattinam.

"Devanampattinam fishermen fancied themselves as law enforcers", said Paramanandan, the former village head of Koonimedu village. "For the police however, the arson that they indulged in was a law and order issue. So they arrested them and put them in custody". When they were charge-sheeted for an act which they believed was legitimate, the fishermen of Devanampattinam thought the state and the police were siding with the law breakers who were using ring seines. "Later when they realised the potential of ring seine in landing huge catches, they also joined the band wagon".

The ring seine units in Devanampattinam used FRP mother crafts and cost around Rs 30 lakh for a second hand unit and may be up to Rs 60-70 lakh for new units.

Ring seine units require 50 crew members. The current practice is about 10-15 of the village's fishermen getting together and sharing investment for a new unit. They add additional immigrant labour coming in from farming communities to utilise the new opportunities in fishing. Sharing pattern is 50:50 after deducting expenses.

Lack of unity among fishermen led to disintegration of groups; now the group size is 10-15; the group participating in the discussion had 15 members, each had invested Rs 3 lakh each. Crew members, in addition to the joint owners, are hired from the immigrants. The availability of immigrant labour allows smaller groups of investors too. They said a joint owner makes about Rs 3 lakh total a year.

At present most of the groups have 10 fishermen investing 3-4 lakhs each in a unit. Ring seines, according to the fishermen of Devanampattinam, changed the nature of the fishery. It pushed up the FRP boat based subsistence fishery to one landing catches worth several lakhs per trip. The ring seine, according to them, offered them an ordinary fisherman to own a unit at least jointly. This, for instance, was not possible at this level of investments in mechanised fishing as the investment pattern itself was different.

Ring seines of Nagapattinam, while using the same model of a mother boat accompanied by FRP boats, had larger steel boats and therefore the investment was higher. A steel boat operated with around 10-12 FRP boats ("SIFFS boats" according to the fishermen). The ownership pattern and operation are extremely different with around 50 fishermen jointly owning the unit and working as crew members too.

Earnings appeared almost same for both the models. A ring seine fisherman of Nagapattinam said a unit owned by 50 fishermen, after investing about a crore of rupees in a ring seine unit, were able to earn Rs 4.5 crore over three years; the per fisherman earning working out to Rs 9 lakh over a three year period.

Managing ring seine units demands unity among the owners and relatively higher levels of management skills. In Chandrapady – Tarangambadi – Chinnangudi stretch of Nagapattinam, ring seines originally came up as operated by groups of 4-5 FRP boats. These slowly evolved into the mother boat and carriers model. While the ring seine sector flourished in Chandrapady, it suffered losses in Tarangambadi and were facing disintegration and phasing out.

"It is all about unity and management", agrees Nedumaran and MKP of Tarangambadi. Fishermen took credit to invest in ring seine units. In Chandrapady, with a high level of unity among the fishermen, they had been able to keep aside a share to pay off the debt on a regular basis. This did not work in Tarangambadi and it led to conflicts.

4.6.5. Relocation of Housing and Impact on fisheries livelihoods

When the housing programme was initiated, fisher folk resisted attempts to settle them away from the coastline. Settlements away from the coast were initially proposed as a means of ensuring safety from future disasters.

“The proposal was not acceptable to the fisher folk and understandably so” says Ephrem who was one of the lead functionaries of SIFFS who worked in relief, rehabilitation and reconstruction. Fisher folk had to stay near the sea and that was essential for their livelihood.

“Small scale artisanal fishing is closely linked to the coastal space; it is not only about the sea” says Joseph, the current deputy chief executive of SIFFS who was the project manager for the organisation’s post tsunami housing project.

“We keep our fishing units on the shore, we mend our nets on the shore, we spend most of our time on the shore; this is essential for fishing operations” says Lachmanan, a senior fisherman of Karaikalmedu.

People with experience in the fishery had pointed out that moving fishing communities away from the coast may be disastrous for them as it would affect their fishing. There were also fears that moving away from the coast would invite new entrants into the coastal space. “We had argued that safety at the coast was more of a function of height of the settlement from the sea level rather than distance; that is why we raised the land allotted for house construction in Tarangambadi” says Joseph.

The district administration was under pressure to find appropriate land for housing; communities were impatiently waiting in the temporary shelters. In the bargain, several villages were allowed to construct at the original sites without modifications. A few villages had to move away; a fewer had to move to the other side of the East Coast Road too, a prospect which could potentially affect their livelihood as well as safety.

Kanyakumari presents an interesting situation of increased integration of fishermen with coastal farmers. It began with the huge death toll due to the tsunami. Mariadas, chief executive of Kanyakumari District Fishermen Sanghams’ Federation (KDFSF) will probably never forget what he saw in Colachel the next morning. “Dead bodies were arrange in a row inside the school compound. More dead bodies were still lying around the village”. An inescapable smell of death hung in the air.

The Church was already into action. Office bearers of the church asked KDFSF to provide bleaching powder and antiseptic solutions to the area, and that was the first thing they did.

Villagers in Chenthamarakkulam, a farming village near the shore offered their land to make a mass grave. Fishermen never had any significant area of land in their possession; they used to be buried in the cemetery of the church; never ever anyone thought about the need for so much land for a mass burial.

The farming community was probably reciprocating to an act by the fishing communities in 1992 when the fishermen went out on boats to rescue them from the massive floods of Tambraparani River.

This time people from the farming community came forward not only to offer land for the mass burial. They even carried dead bodies and did all the physical labour needed at the burial site.

For those who were alive, the inland community offered accommodation, water, food, clothes, and medicines; they took care of them. All these led to building a bridge between the coastal fishing communities and inland people, who before 1992 had kept deep rivalries against, and had maintained a lukewarm relationship between them thereafter till the tsunami.

Now the integration is irreversible. Even if youngsters of the two communities get into qualms between them, the elders intervene to pacify them and the relationship remains. This relationship has thence led to coastal people buying land and settling more into inland areas. Further integration is happening, which is benefitting all.

A new trend along the Kanyakumari coast is youngsters from fishing communities buying plots in inland areas, building houses, and settling down.

“Fisher people always wanted to stay near the shore; didn’t they?”

“Yes indeed. But things have changed after the tsunami led to a better exposure to inland communities and even better integration with them”, says Michael Xavier of Muttom. Safety of the habitat is now considered important and even above the compulsions of livelihood. “There is also the new trend of looking out for job opportunities outside fishery” said Michael Xavier.

Fishing communities of Kanyakumari district had never bothered about ownership of their plots. When a young fishermen married, he would either stay at the parental home, or may be subsequently erect a hut adjacent to the parental house. “It used to be more of an extension of the family house”.

Not anymore; people now value land. They have realised that coastal land fetches good prices and is an asset to any family. They also want to stay in safe locations. Even sea going fishermen now buy plots away from the shoreline, insist on a title deed for it, and commute by a motor bike for work. People from the farming communities have also benefited from the rising prices of land and are willing to sell land to fisher families.

“The widespread availability of motor bikes is also a post tsunami phenomenon” says Christudas. Excess money in the system gained through compensations and donations was behind the new trend.

“Youth are now ambitious. They want better and safe living conditions. Want to have own assets. Things are changing at a fast pace” said Mariadas.

An intermingling of cultures is happening along the Kanyakumari coast. There have also been marriages between youth from fishing and farming communities. This has not yet set in as a trend; still people have come out of their isolated lifestyles and rigid cultural spaces.

4.6.6. Women in Fisheries

Between Home and the Shore

"We lived all along near the coast line. Now our burden has increased as we have to walk between the shore and home several times a day" said Indrani, a woman fish trader of Tarangambadi. Her new house is about a kilometre away from the shore line.

Men spent most of the time at the shore; they mostly stayed in sheds erected close to the shore. Some of these sheds were installed where their houses originally stood. Women have to carry food and water to the shore, and that too according to timing demanded by the fishing operations of the season.

"Times have also changed. Now we have good houses; mixers, grinders, and all sorts of appliances in the kitchen. So, shuttling between the shore and home does not put so much of a burden on us. In old days with everything done manually, this would have been tough".

More Women in Fish Vending

Everyone along the East Coast agrees that there are more women in fish vending now than before tsunami. The usual explanation at the early stages was that tsunami it its wake created so many widows all of a sudden and they had no option but to take up fish vending to look after the families. However, people of Alambaraikkuppam and Kadakkappam Kuppam in Villupuram and Chaturangapattinam in Kancheepuram have a different story to tell.

"Yes, the number of fish vending women has gone up after tsunami. But women's occupation is not about fish vending alone anymore" says Arumukhan, a fisherman from Kadakkappam Kuppam. Women are into various types of occupations – anganwadi teachers, sales women at supermarkets, company jobs and so on. This trend has in fact led to improvement in quality of life.

"I don't mind staying back home to cook and look after the children when my wife goes for work; because her job is more important and provides the stable basic income for our family" said Bhoopalan, while repairing a trawl net sitting in the meeting. He is the driver of one of the mechanised boats in the village.

According to Karunakaran, a fisherman of the village, it was the exposure after tsunami that changed matters. Women, especially younger women, are no more willing to sit at home engaging in household chores alone. They want to go out, work, and earn. With the increased importance placed on children's education, it has also become necessary that women too earn an income. "NGO efforts surely led to women empowerment" says Ezhimalai.

In Kanyakumari, Santhidhan, TSSS, and CPD of KSSS are running SHGs of women. Even though the government programme of SHGs are on, the SHGs affiliated to these organisations have kept their identity intact. Several other organisations that worked among women after tsunami have withdrawn from the area. KDFSF has formed joint liability groups (JLGs) of fish vending women as part of the IFAD project. Impact of harbours on women fish vendors is not yet clear; it appeared that harbours may benefit them during high catches and good seasons.

Scale Issues

Even when fishermen claimed of better incomes, women fish vendors said they were finding it increasingly difficult to get fish. According to them, there was not enough fish. "But fishermen say that they are getting good catches?"

The responses seemed to indicate more of an access problem rather than reduction in fish landings. Large scale landings of ring seine units go to large traders, who have in most cases advanced money to the owners. While the fishermen of Karaikal villages thought harbour was very convenient to them, women found it difficult to buy fish from there as there are numerous large traders operating.

Volume catches elude women; women fish vendors largely depend on small volume landings of low value fishes

Ice Boxes

Ice boxes, introduced in large scale through post tsunami programmes, have been a boon to the women fish vendors of the East Coast. "Ice boxes have definitely led to increase in earnings from fish vending", says Sundaravathy of Tarangambadi.

Many fish vending women were seen using ice boxes sensibly to support their business. Mala and Umaya, two young women fish vendors of Pillai Chavadi village would keep their ice boxes at the road side location where they sit and sell the fish and go to Pondichery market or villages to buy fish. They also buy ice and bring it along with fish. Once they reach the location, they use the ice boxes to keep the fish that would be sold later in the day.

Both the women also used makeshift ice boxes made out of thermocol, which they bought from the market at Rs 150 per box. These, however, were not durable and lasted only for a month or two. “It is possible to manage with a proper ice box and a couple of thermocol boxes”, says Bhanumathy, an older fish vendor from the same village.

Women fish vendors now use ice boxes extensively

Thelliyamma, another old fish vendor also said ice boxes have reduced risk of fish vending significantly. In the past, the leftover fish after a day’s sale had to be dried. Now they can keep it overnight. “We don’t do distress sale anymore the way we used to in the past” says Mala. “Having an option to keep the fish safely overnight is in fact a boon to us”.

Modernisation in small scale fishery over the years had in fact eluded women. The first important use of technology that they had been introduced to was probably ice. Ice boxes increases the utility of ice. It helps them maintain quality of fish too.

Anchaleya Ammal and the ‘Best Dry Fish Unit’ of Keechankuppam

Anchaleya Ammal was a small time commission agent working on the shore engaging in small time trade. She subsequently became the president of the Panchayat Level Federation (PLF) under IFAD PTSLP project. Her entry into dry fish business was incidental when a group of women who had availed loans from the PLF failed to utilise the funds.

‘Best Dry Fish Unit’ engages old and almost retired women fish vendors at Rs 200 per day if there is fish drying and Rs 150 if there is only indoor work. The unit has a work force of six women. Women said they preferred this because it helped them escape the drudgery of fish vending; they had to keep earning, so this was all right for them. However, there were no other places like this where they could go.

With age catching up, this woman has stopped fish vending and now works at a fish drying centre for a daily wage of Rs 150

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4.6.7. Technology Use

Ice Boxes on Boats

Use of ice boxes on FRP boats has been a post tsunami development, according to the fishermen of Chinnoor Puthuppettai. Use of ice boxes has been spreading; fishermen carried them on boats; fish marketing societies used them to store fish. "With the quality improvement in fish brought in by the use of ice boxes, fishermen are able to get much better price on their catch", says Sekhar. He said the impact was higher in the case of species that went for export.

New Technologies

When Lachmanan said they went so far into the sea these days that they did fishing at seas with depth of 300m, one of the fishermen in the group noticed that the person asking questions was not convinced. He intervened and said the depth was as per the echo-sounder that they used on the boats. Post-tsunami programmes introduced several new technologies, some of which turned out to be handy for better fishing.

Fishermen pointed out an economic logic in using GPS, the global positioning system, essentially a navigational support device during fishing. With a GPS, they were able to follow exact routes and repeat them, thus saving of fuel costs as well as running time. Almost all fishermen said they used ice boxes on their boats.

4.6.8. New Infrastructure

Numerous facilities were set up along the coastline by government as well as NGOs during the rehabilitation phase. While some of them are used, some of them were never used for various reasons. Some of them were constructed probably only because funds were available. Many of them were constructed without any consultations with the communities.

A platform for fish drying at Chaturangapattinam South; infrastructure use has been limited across villages.

Among the new facilities that came up, marketing sheds have turned out to be useful facilities in a few villages. Harbour based fish auction centres constructed at Nagapattinam and Pazhayar were never used. There were no consultations with the communities and their requirements were not factored in. The facilities remained unused also due to problems in design and institutional arrangements.

Auction halls and cold storages built in Poompuhar and Annankoil lay unused in spite of huge investments. Cold storages were constructed without considering the nature of the fishery and its requirements. Location and design of auction halls were conceived without any effort to understand the fish marketing operations in these villages. The Annankoil facility presently houses a village level fish marketing society.

The state government constructed a fish auction hall at Arcattuthurai but failed to put in place an institutional system that could address the internal problems in the village. The facility lay unused and is unlikely to be used given the village politics.

Solar fish driers, installed in several villages, apparently on the logic of saving energy in fish drying, but evidently without considering the fish drying practices in the villages or the people involved in fish drying activity, eventually failed without exception. Two boat yards by SIFFS – one in Karaikalmedu and another in Villupuram – appeared to have been constructed without assessing local needs and had failed to take off.

An ice plant that SIFFS constructed in Karaikalmedu also failed due to problems with technology choice. The facility was later handed over to the district federation, which is currently attempting to revive it by changing the technology.

A fish auction hall that SIFFS constructed in Karaikalmedu village is in dilapidated state. It is used only for a few months when there is fish landing at the village. This happens only during the yellow fin tuna season; during other months the boats land at the harbour.

An auction hall at Karaikalmedu; used only for a few months a year

In Kanyakumari, harbours are changing marine fisheries. Government has set up harbours at Thengapattanam and Colachal. A private harbour has been developed at Muttom by the JPR group. New harbours have been proposed in Rajakkamangalam Thurai and Manakkudi.

Harbours lead to concentration of fish landings. This has started affecting the performance of KDFSF's societies; a challenge that KDFSF will have to address. The society at Enayam village has already been affected. Harbours without adequate connecting roads cannot deliver what they are meant to; there has not been adequate attention on improving coastal roads, according to the KDFSF representatives.

Community halls are in use wherever the communities had demanded them; others lay unused. Solar fish driers ended up as non-starters; drying yards also failed. Projects which were completely out of context where also implemented; an oil extraction unit set up in one of the villages lay unused.

A good example of new facilities being used is net mending centres that have come up in some of the villages; these are being regularly used by fishermen.

Table 4.8: Some of the Infrastructure developed under post-tsunami projects

Project	Type of Infrastructure	Location
ETRP (World Bank)	Fishing Harbour:	Nagapattinam Pazhayar
	Fish Landing Centre	Nagore Portonovo Annankoil
	Tube Ice Plant	Chinnamuttom
	Dredging Bar Mouth	Uppanar: Nagapattinam Vellar: Cuddalore
TEAP (ADB)	Fishing Harbour	Cuddalore, Nagapattinam – port rehabilitation – various components
	Fish Landing Centres	Restoration & rehabilitation of FLC at: Mudasalodai, Sethubhavacharram, Kottaipattinam, Jagadapattinam and Punnaikayal

4.6.9. Informal Credit systems – no change!

One thing that seemed to have gone untouched by the vagaries of the disaster and the good-bad-and-the-ugly of rehabilitation appeared to be the informal credit system in the fishing villages of the East Coast. Women in fishing villages across the coast carried huge debts on their shoulders. “Money lenders are the only source when you are in need of urgent money”, says Umaya, a young fish vending woman of Pillaichavady in Villupuram district.

“In the case of a loan of Rs 10,000, the money lender will give Rs 9000 when we take the loan. We have to repay it in 100 equal instalments”, says Umaya. There were different types of informal credit in operation in Tarangambadi. Terms of the loan vary, but the interest rate is anything from 36% onwards.

Money lender –cum –traders invest Rs 5-6 lakh in a ring seine unit in Devinampattinam. The disbursement of credit requires that all the fish catches be sold to them on which the trader gets a 10% commission. The arrangement continues till the principal, less 10% of it for every passing year, is repaid to them.

“We usually don’t repay it fully”, says Parasuraman of Devinampattinam. “Suppose we had taken Rs 5 lakh initially and were selling the fish to the trader for two years. That means our outstanding principal would be Rs 4 lakh. When need arises, we may seek another Rs 2 lakh from the same trader. The principal becomes Rs 6 lakh and the arrangement continues”.

4.6.10. Social enterprises

SIFFS had its fish marking societies in three villages in Nagapattinam district before tsunami. SIFFS used these as bases for their relief and rehabilitation work, and subsequently implemented the housing projects also for two of the three villages. SIFFS and its district federation, however, appeared to have leveraged on their post tsunami activities to set up village level societies across the coast.

In the process SIFFS set up fish marketing societies in 31 villages in Nagapattinam and three societies in Karaikal district. Annual fish sales had crossed Rs 20 crore and the network has more than 2200 members. Of late, SIFFS societies in villages like Poompuhar and Chandrampadi had become defunct as fishermen took to ring seine fishing in a big way. “We do not support ring seine and we do not work with ring seine fishermen” says Vijai, chief executive of the Nagai District Fishermen Sanghams’ Federation (NDFSF).

There had also been failed attempts to organise the fisher folks; a few NGOs had tried organising them into self-help groups. DHAN Foundation had formed a society of fishermen in Nagoor; the organisation was registered and fishermen were given loan. However, the initiative failed.

Self Help Groups (SHGs) of women were promoted by several NGOs along the East Coast after the tsunami. In Nagapattinam district, most of these SHGs have been integrated into the SHG structure put in place by IFAD’s PTSLP. In other districts, the SHG streams are getting integrated with the emerging government-promoted SHG system.

In Kanyakumari, most of the NGOs having worked in the relief, rehabilitation, and some of them in housing, have left the place. There are still a few of them around. What remains as a large organisation is KSSS. KDFSF's coverage is limited to its members.

"Tsunami and the action that followed changed the perception that people had on KDFSF; not only that of outsiders, but of the members too" said Mariadas.

What is this change in perception about? People now believe that members of KDFSF are entitled to more benefits. This has been helpful in forming new societies. The flip side is that people feel a strong sense of entitlement which is sometimes misplaced; they want to be compensated for even when there is a moderate sea swell, for instance, which were all part of coastal life always.

KDFSF and its societies benefited from ADB assistance as well as IFAD project following tsunami. Infrastructure of village level fish marketing societies have improved. ABN AMRO support to repair damaged society buildings during the rehabilitation stage was another visible component. All these have led to changes in people's perceptions of KDFSF as a membership based organisation.

4.6.11. Social Change

A Sea Change

"Tsunami shook our belief of the sea as the supreme provider. The sustained NGO action that followed exhorted us to think of alternatives. They also exposed us to new opportunities", says Karunakaran of Alambaraikkuppam village in Viluppuram district.

Alambaraikkuppam and Kadakkappam Kuppam, two adjacent fishing villages separated from the shore line by a scenic landscape cut through by a river were affected by the tsunami. The rehabilitation process left the village in a much better state than before, according to the fishermen of the village. They have good houses, and better quality of life now.

Fish catches have in fact gone down, say the fishermen. Catches were good before tsunami. But prices were low, indebtedness high, and the quality of life was poor. "Men used to eat only once a day" says Karunakaran, "There was no concept of a timely lunch at all". Now things have changed. There has been an increasing awareness on food habits, health, and hygiene".

"The biggest change has been in the way we looked at education". Karunakaran pointed out the stark contrast between pre-tsunami period and the present. He had passed plus two in 1992-93 and was offered admission in a polytechnic college which was the best in the area. However, nobody would even think of investing the Rs 5000 which was required for admission and initial expenses. Now Karunakaran has enrolled his son for engineering; has spent Rs 1 lakh already, will be spending much more over the next four years.

"People are willing to borrow for financing children's education", says Govindasamy. People no more looked at sea as the only provider of a life for them. There were more than 200 children from the two villages put up at hostels of private schools. "Children's future is a concern now", says Arumukhan, a fisherman.

People want to look beyond the sea. They want to lead quality lives, save money, educate their children, and take steps to overcome the uncertainties of income characteristic of fishing. "The sustained NGO action in fact changed the way we approach life" says Ezhimalai, a fisherman of Chaturangapattinam South village in Kancheepuram district.

Exposure and Change

Several men and women in the fishing villages of East Coast felt that they sustained NGO action during and after the rehabilitation stage made significant impact in their lives. Indrani and Malar in Tarangambadi pointed out the improvement in general hygiene. Women and girls no more did open defecation; same was the case with young men and boys. Fishermen still resisted using latrines and did open defecation on the shore.

Tarangambadi has a system of waste collection originally put in place through NGO intervention and presently run by the Town Panchayat. Every household paid Rs 30 per month and people have been willing to pay. "The system works well for us. Don't you think our village is clean now?" asks Sundaravathy. It was not just the village, the house in which we sat for discussion was well kept. Water was served in clean utensils.

4.6.12. New Issues: Climate Change

Fishermen believe that impacts of climate change factors have been more prominent after the tsunami. Wind patterns have changed unpredictably, according to fishermen. The puyal (cyclone) that used to happen in Karthika (Nov-Dec) month hit in Thai (Jan-Feb) month this year, upsetting the natural fishing season. A cyclone in November – December used to fetch good catches in subsequent months. But a cyclone in January is a harbinger of poor fishing season.

Vadakkathu – the wind from North to South and Kachankathu the wind from South to North and their timing are important for fishing cycle" says Govindasamy of Kadappakkam Kuppam. By Thai Pongal, celebrated in mid-January, the Vadakkathu should stop and give way for Kachankathu. This year, even in February, Vadakkathu continues and there was no sign of Kachankathu. This has made fishing uncertain.

Effects of climate change, according to the fishermen, had been accentuated by the manmade changes along the coast line. "Bar mouths have been closed so there was no water flowing into the sea anymore" says Karunakaran, a fisherman from Alambaraikkuppam. So even in years of good rains, there was no improvement in fish catches, unlike in the past.

4.7. The FIMSUL Project

In 2006, a scoping study was carried out by FAO, World Bank and DfID (Neiland, et al. 2006). Some of the findings of the project were:

- The large and productive marine fisheries of Tamil Nadu currently show signs of increasing biological and economic overexploitation
- Current marine fisheries policy in Tamil Nadu is focused on increased and sustainable fisheries exploitation, supported by new infrastructure and input supplies such as harbour development and fishing gears
- Institutional arrangements in the marine fisheries of Tamil Nadu are complex, involving a range of both formal and informal 'players' in the allocation and regulation of fishing use rights
- The potential production value of the marine fisheries of Tamil Nadu is high (up to $860 million /year), but a majority of the fisheries stakeholders are vulnerable to poverty
- Tamil Nadu does not have a single, agreed or consistent fisheries management system, and the future operationalisation of new approaches such as 'co-management' represent a major challenge
- The immediate post-tsunami rehabilitation efforts have been very successful overall, but the long-term problems in the fisheries, due to a lack of effective fisheries management, remain a serious threat for the future, and
- The involvement and support of both national and international organizations in posttsunami relief has also created a unique opportunity to address the long-term problems in the fisheries of Tamil Nadu and especially the weaknesses in policy and implementation of fisheries management.

Subsequently, under the World Bank trust fund for tsunami recovery, the Governments of Tamil Nadu and Puducherry along with the Food and Agriculture Organization of the United Nations (FAO) implemented a project called Fisheries Management for Sustainable Livelihoods (FIMSUL) from April 2010 to December 2011. The process followed was a mix of stakeholder participation and expert reviews and analyses in seven inter-related Work Packages. The output from the project was a 15 point vision statement[7] developed by the fisheries stakeholders through a detailed bottom-up participative process apart from a set of recommendations with respect to fisheries livelihoods, comanagement, policy coherence, governance, communication and knowledge management. Specifically, with respect to comanagement, three pilot areas were proposed for in depth study and development of an action plan.

Some of these are to be taken up under the FIMSUL-II programme under the World Bank's Coastal Disaster Risk Reduction Project (CDRRP). Because of the time gap between FIMSUL-I (ended 2011) and FIMSUL-II (starts 2015), a bridging project, the Technical Cooperation Programme with the support of UNFAO is currently underway to reach out to all

[7] Vision Statements for the Marine Fisheries Sector in TN & Py. https://sites.google.com/site/fimsul/home/vision accessed 1 March 2015

the stakeholders for disseminating the recommendations of the FIMSUL-I, assist TN and PC in

- the development of a reformed policy,
- legal and institutional framework for effective implementation of FIMSUL initiatives, including co-management in fisheries management,
- development of strategies for enhancing and diversifying fishers' livelihoods,
- enhancement of knowledge management,
- assessing the feasibility for setting up wireless communication network for ensuring safety of fishers at sea and
- preparation of a detailed project report for the activities proposed under FIMSUL-II for the CDRRP of ETRP-II.

4.8. CDRRP

With the ETRP coming to an abrupt end on 31st December 2011, a number of activities, especially work related to infrastructure remained incomplete. Hence, the World Bank has sanctioned "Coastal Disaster Risk Reduction Project" (CDRRP) at an estimated cost of Rs.321.30 crore. Under this, the following components are proposed to be completed before June 2018.

- Fishing Infrastructure (Project cost Rs. 220.30 crore): Reconstruction and modernisation of fishing harbours at Nagapattinam and Pazhayar
- Permanent opening of bar mouths of Uppanar river bar-mouth in Thirumullaivasal village of Nagapattinam District and Vellar river Bar-mouth in Cuddalore District (completed)
- Construction of Two New Fish Landing Centres at Nagore in Nagapattinam district and Parangipettai-Annankoil Village in Cuddalore District
- Construction of Tube ice plant at Chinnamuttom
- Modernisation of Mallipattinam Fishing Harbour in Thanjavur District (Rs.60 crore)
- Stabilisation of Bar-mouth at Punnakayal in Thoothukudi District (Rs.18 crore)
- Conducting studies for New Fishing Harbour Projects (Rs.10 crore)
- Fisheries Management for Sustainable Livelihood – II (FIMSUL-II)
    - Marine Fisheries Co-Management (Rs.27 crore)
    - Improved Capacities and Knowledge Management (Rs.5 crore)
    - Fisheries livelihood support (Rs.13 crore)
    - Management Support (Rs.4 crore)
    - Providing Wireless Communication facilities to ensure Sea safety (Rs.52 crore)

4.9. Current State of the Fisheries

A tabular summary of the current state of fisheries based on extracts from the annual Fisheries Policy Note is given in the Table 4.9 along with data from 2004-05 to enable a comparison over a decade.

Table 4.9: Current state of Fisheries

	Total fishers (lakhs)	Active fishers (lakhs)	Number of villages	Fish production – lakh tonnes	Number of societies	Fishing harbours	FLC	Mech craft	Traditional non motorized	motorised
2004-05	7.37	2.8	591	~3.8	• 758 (3.78 lakh members) • 19 other types of Cooperative societies with 3559 members, • 11 District Fishermen Co-operative Federation and • one State Federation	3 major: Chennai, Thoothukudi, Chinnamuttom 2 minor: Pazhayar, Valinokkam Proposed fishing harbour in Rameshwaram, Pazhayar, Mallipatnam, Thengapatnam, Muttom (under BOOT)	10 Proposed of which 7 selected for construction: 1. Tharuvaikulam 2. Keelavaipar 3. Chinna Erwadi (shore based facilities) 4. Keelakarai 5. Nagoor 6. R.Pudupattinam 7. Ponnagaram	12000	30700	20000
2014-15	9.24	2.06	608	4.32	• 575 men: 3.38 lakh members • 445 women: 2.18 lakh members	Major fishing harbours: Chennai, Thoothukudi, Chinnamuttom Major fishing harbours under construction: Thengapatnam, Poompuhar, Colachel, Muttom Medium fishing harbours: Pazhayar, Mallipattinam, Nagapattinam, Cuddalore Jetties: 8	Developed FLC: 25 Fish Landing Centres Under Tsunami Rehabilitation Programme: Completed: • Kadalore-Periyakuppam (Kanchipuram district) • Ekkiyarkuppam (Villupuram district) • R.Pudupattinam (Pudukottai district) • Keelakarai (Ramanathapuram district) • Threspuram and Periathazhai (Thoothukudi district) In various stages of progress: • Ennore-Mugathuvara kuppam, Annamalaichery, Periyamangodu in Tiruvallur district • Uvari (Tirunelveli district) Additional facilities at Ennore-Mugathuvara kuppam, Kadalore-Periyakuppam and Threspuram Phase II Other FLC: 363	5253 regd online	4907 regd online	25529 regd online

5. SHELTER

5.1. Housing in Tamil Nadu

As per the general Census of 2001, only 58.41% off the total housing of the State of Tamil Nadu comes under the permanent housing category, 18.9% under the semi- permanent and 23.39% under the temporary category, of which, 19.76% are serviceable and 3.6% non-serviceable. The rural areas show a different profile with only 47.28% having permanent structures, 20.22 having semi- permanent and 32.49% having only temporary structures as dwelling places. The profiles of the coastal districts show a distinct increase in semi-permanent and permanent structures and only the inland districts show a higher ratio as having permanent housing. The highest ratios of semi- permanent and temporary housing are in the coastal districts of Kanyakumari, Ramanathapuram, Tirunelveli, Villupuram, Nagapattinam and Tiruvarur (Figure 5.1). More than one-third of the population, in these districts, live in temporary structures. This data assumes significance when seen against the backdrop of devastation of housing during the South Asian Tsunami of 2004. It is but natural that the housing took a massive hit and these vulnerable coastal districts suffered the most.

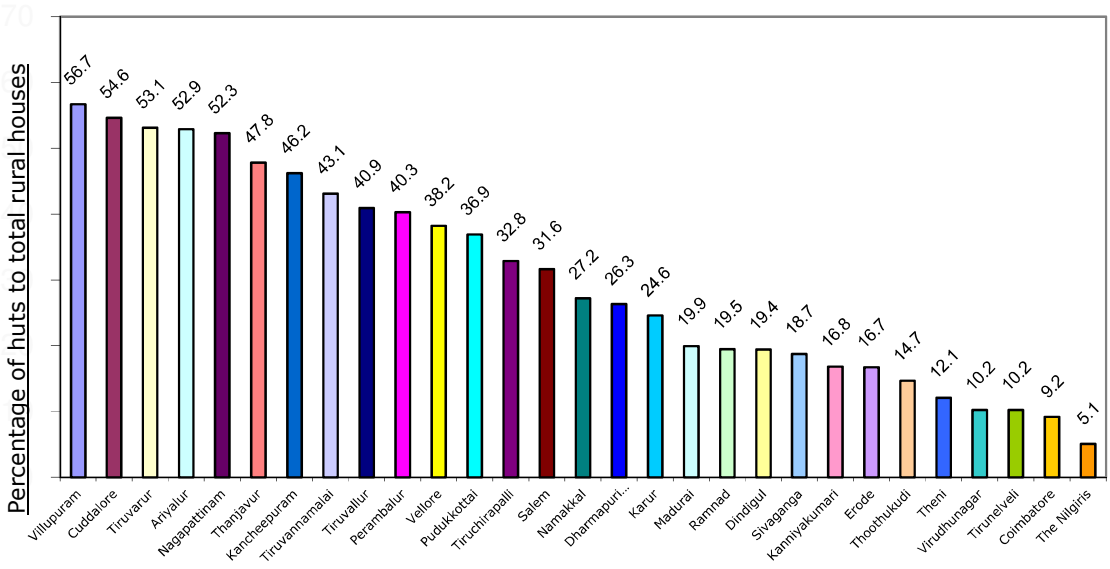


Figure 5.1: Percentage of huts to the total number of rural houses in each District (Census 2001)

5.1.1. Fishing community's housing

The houses of fishing community are located close to the shoreline in most places. Information from the TN Marine Fisheries Census 2000 has been used to understand the ground situation with respect to shelter before the 2004 tsunami. Figure 5.2 gives the distribution of houses based on their building material. The government, over the years, has been providing free houses to fishermen; most of these are made of brick and cement for the walls and RCC for the roof but they are often of poor quality and modified or even abandoned over time. Though they should be clubbed with the terraced house, they have been

shown in the figure as a separate block. Because of the free housing, the number of thatched (kutcha) houses is probably getting reduced over time.

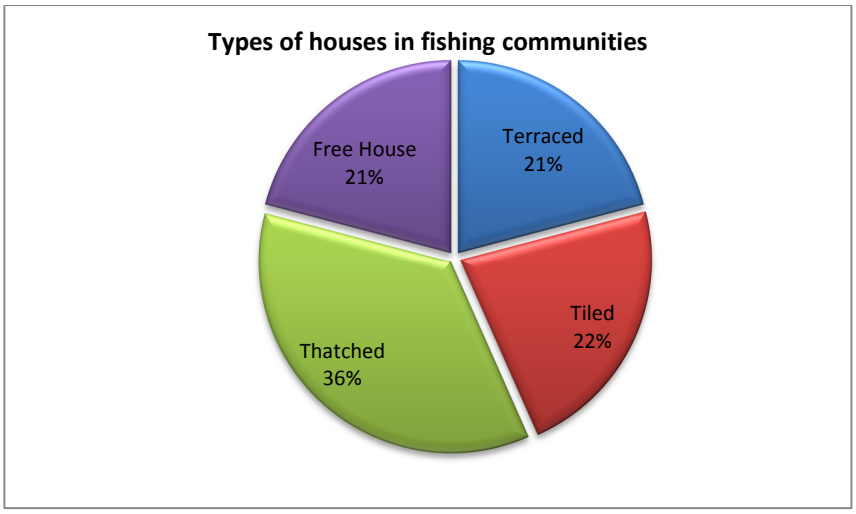


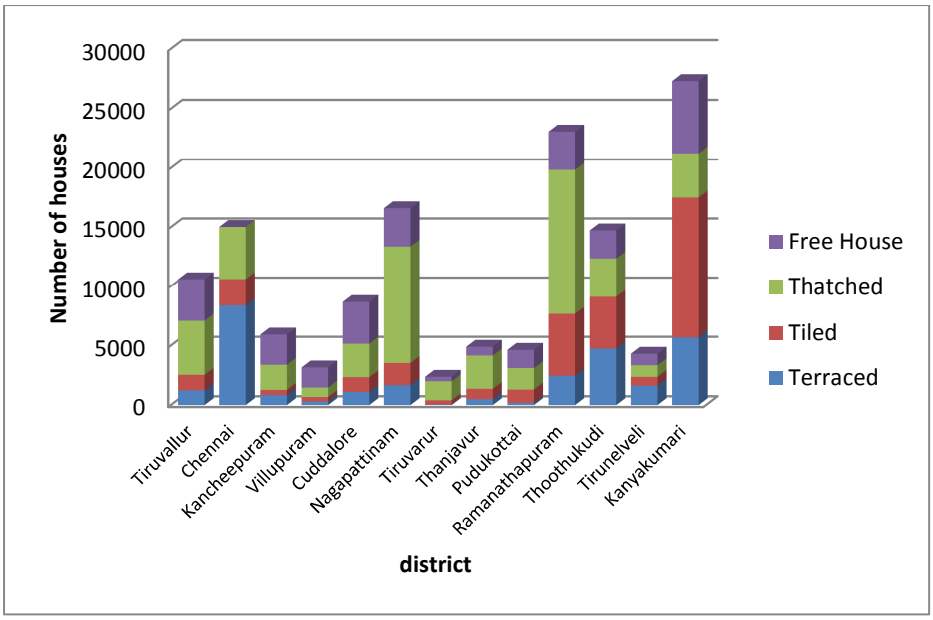
Figure 5.2: Housing distribution

The district-wise distribution of the different types of houses is given in Table 5.1 and Figure 5.3.

Table 5.1: Housing (TNMF Census 2000)

District	Housing				
Tiruvallur	**total number of houses**	**Terraced %**	**Tiled %**	**Thatched %**	**Free House %**
Chennai	10600	11.66	12.32	33.12	33.12
Kancheepuram	15023	55.83	14.78	0.00	0.00
Villupuram	5932	14.01	7.43	42.92	42.92
Cuddalore	3161	9.40	11.89	53.56	53.56
Nagapattinam	8676	12.66	14.37	40.58	40.58
Tiruvarur	16609	10.08	11.20	19.54	19.54
Thanjavur	2373	2.02	14.92	15.72	15.72
Pudukottai	4899	10.00	17.84	15.02	15.02
Ramanathapuram	4640	4.09	23.88	33.02	33.02
Thoothukudi	23077	10.67	22.61	13.97	13.97
Tirunelveli	14733	32.22	29.63	16.19	16.19
Kanyakumari	4312	37.76	17.18	22.38	22.38
Tiruvallur	27305	20.85	43.27	22.16	22.16

Figure 5.3: Types of houses in fishing villages



As may be seen in Nagapattinam and Ramanathapuram districts, there is a high proportion of thatched houses whereas Kanyakumari district has the largest number of tiled houses. With respect to ownership, the proportion of rented houses is very low as can be seen from Figure 5.4.

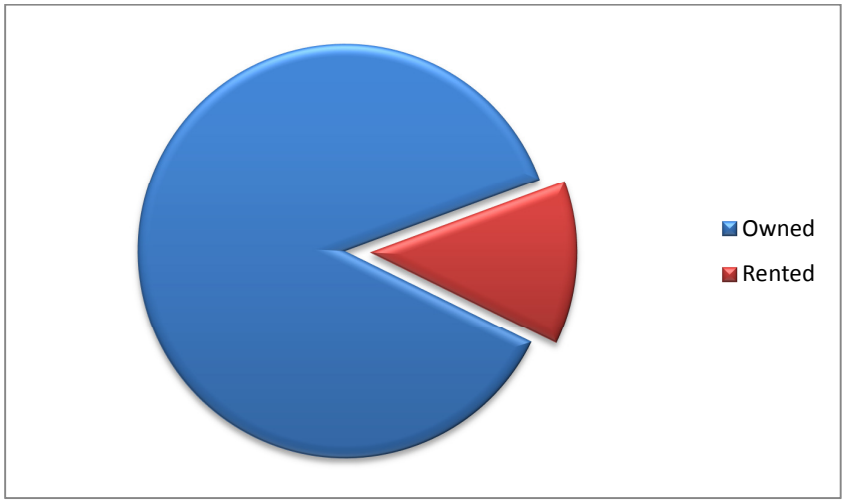


Figure 5.4: Owned and Rented Houses

5.2. Damages

The district-wise damage to the houses due to the 2004 tsunami is given in Table 5.2.

Table 5.2: District-wise damage to houses

District	houses partially damaged	houses fully damaged	total
Tiruvallur	0	0	0
Chennai		16839	16839
Kancheepuram	898	3702	4600
Villupuram	106	834	940
Cuddalore	544	2328	2872
Nagapattinam	2169	17461	19630
Tiruvarur		716	716
Thanjavur		3	3
Pudukottai			0
Ramanathapuram			0
Thoothukudi		630	630
Tirunelveli			0
Kanyakumari	3953	3379	7332
Total	7670	45892	53562

Source: For damages: Tiding over Tsunami-I, GoTN,

Damage in Colachel, Kanyakumari

5.2.1. Structural Damage to houses

Damage and destruction from tsunamis is the direct result of three factors: inundation, wave impact on structures, and erosion. Teams from IIT Roorkee's Department of Earthquake Engineering visited the coastal regions of Tamil Nadu, Puducherry and Kerala in the first week of January, 2005 (Paul 2006). They found that there was little evidence of damages due to direct shaking while the damage due to tsunami was extensive. Both masonry and concrete structures were damaged, though level of damage varied and a direct correlation was found between run up height and level of damage; the highest value run up reported was 12 m in Keelamanakudy and Meelamanakudy towns of the Kanyakumari district, which were also structurally the worst-hit (Maheshwari, Sharma and Narayan 2005). They looked at three types of buildings- A: Buildings in field-stone, rural structures, unburnt-brick houses, clay houses, B: Ordinary brick buildings, buildings of large block, half-timbered structures and C: Reinforced buildings, well-built wooden structures. The damage assessment ranged from Grade 1 where only slight structural damage as in thin cracks in the plaster to small pieces of falling plaster to Grade 5 which included partial or total collapse of building. Some of the observations were as follows:

- Compound walls: They were the first component hit by the waves, collapse was due largely to failure of foundations; brick masonry often used for the walls could not withstand the lateral forces of the tsunami.
- Damage to brick masonry: Widely used in the construction of low rise buildings. Collapse often due to the use of poor cementing materials (e.g. mud)
- Collapse of adobe houses: Many fishermen's houses were reportedly made of bricks with mud mortar and thatched roofs (adobe houses). Poor construction and inability to withstand lateral forces.
- Failure of columns and toppling of roofs: Poor reinforcement, failure of foundation etc.
- In low lying areas (Melamanakudy village in Kanyakumari district), despite RCC frame buildings with masonry refills, damage was very high probably because of the low lying area, high value of run-up and high inundation.

The authors also made a number of recommendations such as adequate depth of foundations, proper reinforcements in the case of brick masonry, avoidance of adobe structures and introduction of earthquake resistant designs in RCC structures according to the latest seismic codes.

5.3. Relief Camps to Temporary Shelters

With more than 10 lakh people affected coupled with the fear factor, the number of people that had to be immediately transferred to relief camps crossed 14 lakhs in the first couple of weeks. Although there were cyclone shelters in some of the affected villages, these were not sufficient and the people were moved to marriage halls, schools, colleges, hostels and

premises of temples, mosques and churches. The Government swung into action and provided cooked food and other necessary relief materials. Support poured in from hundreds of humanitarian agencies and volunteers who started coming in from the second day of the tragedy onwards.

As this was during the Christmas vacation, the schools and colleges were available for the setting up of these relief camps. However, they had to reopen and life had to move on. Pongal, which was an important festival in Tamil Nadu was during the second week of January and the Government, in its wisdom, felt that the best gift it could offer was a feeling of normalcy to the affected people through shifting them from their relief camps to temporary shelters. Given the scale of support that was pouring in, and the faith of the Government in its own systems to deal with the aftermath, it was felt that it would not be long before they could reinstall the affected people in their own houses, either new or repaired. Hence the interim period between the relief camps and permanent housing was estimated to be less than a year and this misplaced belief is what led to the decision to provide temporary shelter instead of interim shelter. It was decided that the people in the relief camps would be moved to Temporary Shelters by the 14th of January, exactly two weeks after the disaster.

Box 5.1: The GO regarding Temporary Shelter

Rev (NC III) Department

G.O.Ms.No.10 Dated: 6.1.2005
Read:
G.O.Ms.No.575, Revenue, dated 28.12.2004.

Order:

The Tsunami (giant tidal wave) that struck the Tamil Nadu coast on 26.12.2004 was unprecedented devastation in the coastal districts. The destruction was severe. Huts and pucca houses have been flattened, fishing boats have been smashed, buses and big tankers have been strewn around. The families living along the coastline have lost all their possessions.

It is estimated that around 1 lakh families displaced from their homes have been accommodated in relief camps. They cannot be kept in relief camps long, as they are not used to this. They would like to start their homes again. Hence they have to be shifted on some basis to their original habitations as quickly as possible. Thus it is viewed that some temporary accommodations should be created in their respective habitations at suitable locations. The temporary accommodation may even be in their original locations, if safe.

After careful consideration the government issue following orders:-

The Collectors are empowered to build such temporary accommodation based on a unit cost per family/house. They can be allowed to develop their own models. This will take care of local preference.

The Collectors are empowered to have this executed through DRDA, PWD, Highways or any other agency keeping proper accounts of the same. This will enable the collectors to undertake this work without any delay.

The unit cost is specified at Rs. 8000/- per family.

Good NGOs willing to put up such temporary accommodation can also be allowed.

The Collectors are given specific instructions that the design of the temporary structures and the location is acceptable

5.3.1. Selection of NGOs for Construction of Temporary Shelters

It was estimated that about a lakh families would have to be provided temporary shelters while awaiting repairs or reconstruction. There were civil society organizations willing to support the setting up of the temporary shelters. Different districts followed different processes to identify the NGOs to set up the Temporary shelters. In most of the districts, the Collectors assigned locations, based on the financial capabilities of the NGOs. In Nagapattinam, as the scale was much more than the rest of the districts, this exercise was largely supported by the NGO Coordination and Resource Centre, which followed a transparent procedure through a series of NGO meetings, and allowed self-selection through a participatory process.

Temporary shelter location - Site Allocation/ selection Meeting in Nagapattinam

As the design and the structure, including the maximum permissible cost was already given by the State Administration, the setting up of these temporary shelters did not take much time and the people were transferred to these new facilities well within the two weeks allotted. Common sanitation and water supply facilities were set up in the shelters provided and UNICEF trained youth volunteers to oversee the effective and hygienic utilization of these facilities.

5.3.2. Selection of Structure

There were discussions on the type of temporary shelters to be provided. The Nagapattinam NGO Coordination Centre had recommended that the Temporary shelters be set up by the affected communities themselves with the locally available materials like mud bricks and thatches that they were familiar with. This would not only ensure ownership, but also a level of comfort as it would be designed to their requirements and could be maintained by them. A model was also displayed at the Nagapattinam Collectorate grounds. However, lack of readily available material was a serious impediment to the deadlines given.

Eco-friendly model set up by Nagapattinam NGO Coordination Centre

Taking the need for speed and scale into consideration, the final model was one identified by an Officer working as one of the Ten Team Leaders for relief operations in Nagapattinam. This was a linear structure based on a framework of wooden poles and covered with bitumen sheets, both of which were readily available. This was hailed as innovative thinking and the structures were put up in the locations identified.

Temporary shelter covered with bitumen sheets

However, the following summer, these structures lost the roofing to the strong winds of the Aadi month (July- Aug) and had to be redone. The Local Administration and the NGOs pitched in to redo the roofing. As these bitumen sheets were hot and uncomfortable, they provided an additional thatched roofing.

Temporary shelters with thatch roofing

Temporary shelter location lists (NCRC)

5.4. Temporary Shelters vs Transit Shelters

The common adage of "haste makes waste" was proved over and over again in the case of the temporary shelters. The under estimation of the time required, to identify suitable sites and construct new houses, resulted in the people having to stay on in these temporary shelters from 2-4 years. While in Kanyakumari, Cuddalore and Tirunelveli, where the number of houses to be reconstructed ranged from 1000 to 5000, the people were able to move into their permanent habitations within 2 years, by 2007, whereas in Nagapattinam, where 20,000 houses had to be constructed the people could move in only by 2008. This essentially meant that the families had to spend two to three summers and monsoons in these shelters which were not built to last the year. To make matters worse, the monsoons in 2005 were particularly bad, leading to flooding in all sites. The NGOs and the district administration had to make further investments in raising the flooring of the shelters, relaying the roof material, rebuilding the sanitation facilities and also relaying the internal roads. Apart from the initial investment of Rs. 8000/- per shelter, there was an additional investment of Rs. 4-6000/- each, twice in the period between 2005 and 2008.

In hind sight, if this total amount of Rs. 20,000/- had been invested in the first round itself by setting up transit shelters, the people would not have had to face so many problems or indignities. Looking back, almost all the major decision makers of the State Administration voiced regrets in the designing and implementation of the temporary shelters. While the pressure to deliver is understandable, we need to learn from lessons from world over, that large scale reconstruction of habitation takes an average of 4 years and that the safety and comfort of a people already traumatized should take precedence over populist, knee jerk response type of decision making.

As mentioned in the Report" Tiding over Tsunami Part 2", The Government , in consultation with NGOs, UNDP and other experts, evolved guidelines to ensure that, in future, temporary shelters would be built to better minimum standards. The detailed specifications were also provided in the same report as an Annexure.

5.5. From Temporary to Permanent- wheels within wheels

5.5.1. Policy for Reconstruction

To resettle the affected, the Tamil Nadu Government formulated the " Long Term Rehabilitation and Reconstruction Policy" under which, permanent shelters will be built as per the Coastal Regulation Zone notifications through Public-Private Partnerships in terms of MoUs beetween the District Collectors and NGOs/ Corporates undertaking construction of houses in the respective districts. Interestingly the very first Government Order on permanent housing was released GO No 25 dated 13.01.2005 estimated only Rs. 50,000/- per house to be constructed, similar to Andhra Pradesh which spoke about Rs 40,000/- per house based on the IAY. Interestingly, this GO looked at a composite participation where the NGO had to invest a total of Rs. 75 lakhs- Rs 25 lakhs for housing, Rs 25 lakhs for common infrastructure consisting of roads, water supply etc and the remaining Rs 25 lakhs for livelihood

rehabilitation. This would necessarily mean an overall intervention within a village. However, this did not speak about the CRZ compliances. It was subsequently that the CRZ compliance was brought in. The need for incorporating disaster resilient features in the new constructions escalated the estimated cost of construction. The newly formulated Policy took all this into consideration and decided to provide disaster resilient houses worth Rs. 1.5 lakhs with a built up area of 325 sq.feet in 3 cents of land in the rural areas and 1.5 cents in the urban areas to those who were ready to move beyond 500 mtrs of the High Tide Line. Legal ownership was made in the joint name of husband and wife, or the survivor or the eldest surviving child. For availing the new houses, the old houses would have to be relinquished to the Government and the vacated land would be entered in the Prohibitory Order Book and maintained for public purposes. All houses, whether partially or fully damaged, within 200 mtrs of High Tide Line were given the option of availing of a new house beyond 500 mtrs of HTL. Between 200 to 500 mtrs., only those with fully damaged houses were provided alternate housing beyond 500 mtrs. Funding was provided for repairs and maintenance to those with partially damaged houses in the 200 to 500 mtr zone. However, those who were in the less than 200 mtr zone and were not willing to relocate, were permitted to repair their homes but were not provided any financial assistance from the State.

Box 5.2

Highlights of GO 172:

d) Other General Guidelines

1. The land for the houses will be given free of cost by the Government at the rate of 3 cents in rural areas and one and a half cents in municipal areas.
2. Priority will be given for non-Governmental organizations, Public Sector Undertakings, Corporate Houses and Rehabilitation organizations to reconstruct and repair houses with their own money.
3. Where NGOs/other organizations do not come forward to construct new houses or repair existing houses the house owners will be permitted to construct/repair the houses themselves with financial assistance from the Government, subject to the financial ceilings and the technical specifications given by Government. District Collectors will render all the necessary assistance to the house owners/NGOs/ etc., to facilitate speedy construction.
4. Wherever the beneficiaries are unable to construct the house themselves with financial assistance from the Government and the NGOs are also not forthcoming, the Government will build the houses.
5. In all cases where new houses are given, the old site and the old house will have to be relinquished to the Government by a legally acceptable document. The District Collectors will ensure that these documents are properly registered and brought to Government account.
6. The areas so vacated because of new construction will be entered in the Prohibitory Order book and maintained for public purposes. Fisher people will be permitted to keep boats, nets etc. in these areas. Separate sheds, locker rooms etc. may be put up in these locations by Government/NGOs on a temporary basis as per CRZ guidelines.
7. The new houses should conform to the specifications developed by technical experts already communicated to the District Collectors from the State Relief Commissioner's office.

8. All the new houses will be insured for 10 years at the cost of the executing agency. The cost will be included as part of the Project cost.
9. The title of the house will be given in the joint names of the wife and husband and if one of them is not alive, in the name of the survivor and the eldest child. The houses cannot be alienated / mortgaged/sold for ten years. Any transfer of the share of the wife's property to the husband will be declared void.
7) The Collectors are permitted to make small changes during implementation depending upon the local conditions and the wishes of the people. While making such changes, they should consult the village level Tsunami Rehabilitation Supervisory Committees already constituted and as far as practicable such changes should be applied uniformly to all the new houses in the habitation. The Special Commissioner and Commissioner of Revenue Administration /the State Relief Commissioner may issue supplemental instructions/clarifications wherever necessary.

As per the MoU between the District Collector and the NGO/ Corporate, the Local Administration was resposnsible for providing land, services like power, water and sewerage connections as well as the main access roads to the habitation, while the NGOs/ Corporates would construct the houses with toilets, rain water harvesting units and internal roads. A separate GO No 75 was released delegating the powers of land acquisition to District Level Negotiation Committee and also the guiding principles for the acquisition of private lands. Adequate funds were also transferred to the District Collectors to fast track the land acquisition.

5.5.2. Selection of Relocation Sites

The World Bank had come forward to fund creation of private assets with one stipulation that the CRZ[8] norms be followed in construction of habitations. All districts affected had their own issues and problems when dealing with reconstruction of habitations. While Nagapattinam had to identify appropriate sites for 20,000 households in a terrain that was largely below mean sea level, Kanyakumari had to grapple with finding adequate spaces for relocation in a densely populated area and all districts had to deal with the norms of the CRZ. Although life security was a major factor in deciding the sites for relocation, considering that more than 80% of the people affected were working fisher-folk, their access to the sea and shore, for their livelihoods, was also a subject for heated debates during the first month after the tsunami. The CRZ emphasized that new constructions would be permissible only beyond 500 m from the HTL. "To move or not to move" was taken up at all platforms right from the villages to the State level.

[8] CRZ refers to the Coastal Regulation Zone Notification, 1991 issued under the Environment (Protection) Act, 1986. Coastal stretches 500m from the High Tide Line were declared as Coastal Regulation Zone. Activities in this zone were restricted. The CRZ was further classified into four: CRZ I include the ecologically sensitive areas and no construction was permitted within 500m from the HTL in these areas. CRZ II referred to substantially built up areas where no construction was allowed seaward of existing road but repairs of existing authorised structures were permitted. CRZ III were largely rural areas. Here, from 0-200m, no construction was permitted though repair of existing authorised structures was allowed; construction/ reconstruction of dwelling units between 200m and 500m of the High Tidal Line permitted so long as it is within the ambit of traditional rights and customary uses such as existing fishing villages and gothans. (S.O.114 E as amended upto 3rd October 2001. http://www.moef.nic.in/legis/crz/crznew.pdf accessed 1 March 2015)

Relocation of communities also had implications on the socio-economic and cultural dynamics and had to be respected. Similarly, there were many NGOs willing to construct, but at different scales. Matching sites to communities as well as NGOs proved an exercise by itself and was handled in various ways: either through a direct one-to-one dialoguing between the Administration and the respective NGOs or through direct assignment or even through participatory processes like in Nagapattinam. However, the underlying principles followed were that the communities should be maintained intact wherever possible and that every NGO, however big or small, should be given an opportunity for participating in the construction activities. Such small NGOs were allotted the construction of a Community Centre or a Childrens playground. In Cuddalore, the Collector assigned the responsibility of construction of community infrastructures also to the NGO given charge of construction of houses.

Box 5.3

Allotment of hamlets—Some principles/suggestions

- A hamlet/village that has its own clear cut identity and traditional system of internal governance like a caste Panchayat should be considered indivisible. A list of indivisible hamlets is attached.
- Only one NGO should ideally be given responsibility to reconstruct one indivisible hamlet. If there is more than one NGO in the fray and there are two separate settlements coming up as a result of land purchase difficulties, then each NGO can be given a separate settlement to plan.
- A new settlement should be allotted to only one NGO for reconstruction to ensure that settlement planning can be done properly; if for some reason a settlement has to be allotted to two NGOs, it should be only on the basis of common settlement planning being done by the concerned NGOs and a willingness to work together
- Pre-qualification information needs to be properly scrutinized and tabulated. Only those who have clearly qualified on the basis of the guidelines given by the Govt. to the Collector should be considered eligible for allotment at present. If there is good reason to believe that an NGO will be able to come up with resources, the collector can use his discretion and give extra time to produce proof
- The original deadline was 10th March and the Collector may give priority to those who have met the deadline.
- When choosing NGOs for allotment in a situation where more than one NGO has put in a request, the following criteria may be kept in mind: pre-tsunami relationship with village/area, post tsunami work in the area and long term plans for work in the area.
- A possible modus operandi for allotment:
  - Finalise list of NGOs that qualified
  - First match NGOs and hamlets and allot all those hamlets where only one NGO is bidding after ascertaining that they have funds for covering the entire hamlet
  - For villages where there is competition, allotment should take into account the pre-tsunami, post tsunami and long term plans of the NGO for the concerned hamlet
  - When there are some NGOs who are offering to reconstruct a large number of hamlets and the overall picture is one of over subscription, then the larger players

may have to be given a lower number of hamlets making sure that all those who can take up at least one hamlet are allotted one hamlet

- Very small players who cannot be matched with any indivisible hamlet should not be encouraged.

(Extracts from a letter dated 6.4.2005 from NCRC to District Collector, Nagapattinam)

At this juncture some important features of this order must be highlighted: specifically the decision to build multi-hazard resilient houses and providing insurance coverage (a relatively rare feature) indicating the understanding of the government about the need to mainstream disaster risk reduction; and to ensure equity by inclusion of the wife's name, thus adding an important step in equity and for women's empowerment.

The housing reconstruction has been carried out in two phases. In the first phase, it was primarily for the tsunami affected where houses were constructed by NGOs through a public-private partnership with the land being provided free of cost by the government; and in some cases by the government. In the first phase, 31032 houses by NGOs and 22257 by government (largely in urban areas) in nine districts was taken up. Of these, by June 2008, 29056 houses by the NGOs and 7204 houses by the government had been handed over to beneficiaries. The houses completed by the government were only in the urban areas (Chennai and Tiruvallur). The houses constructed by government include 'NGO backed out houses' (Table 3, Tiding Over Tsunami-II, 2008).

There were three schemes under which the housing reconstruction was carried out

i. Private-Public partnerships with the NGOs
ii. Houses constructed through World Bank Funding (through the ETRP).
    a. In the first phase, this was for houses where NGOs had backed out/ surrendered
    b. In the second phase, called Vulnerability Reduction of Coastal Communities (VRCC), funded by the World Bank, for houses between 100 to 200 mtrs of a river or between 200- 1000 meters from the HTL on the coast, and
iii. The Rajiv Gandhi Rehabilitation Package for construction of houses within 200 meters of the HTL on the coast.

The ETRP-VRCC came to a close in December 2011. However, based on the suggestion from World Bank another project "Coastal Disaster Risk reduction Project (CDRRP)" was initiated from November 2013 for Rs. 1481.80 Cr for new livelihood generation and risk reduction initiatives relating to Fisheries Department, Community Based Disaster Risk Management and also the ongoing works of VRCC. There has been a gradual shift of the actors from NGOs in the first phase to the PMU of ETRP in the second phase and then to the Rural Development Department.

The beneficiary lists for VRCC had been created fairly early in late 2006 and early 2007. The Government had contracted local NGOs to validate the lists and work with the communities

for converting their vulnerable house to a disaster resilient structure while also taking care of their individual aspirations and needs. A total of 55293 houses have been identified as vulnerable. In the rural areas, these are in-situ constructions, while in the urban areas of Marina in Chennai, these are tenements. To begin with sanction was accorded for 22000 houses in situ under the RGRP. The TNSCB has been entrusted with the constructions in the urban areas and in some rural areas which NGOs have left incomplete and the Department of Rural Development and Panchayati Raj in rural areas. The remaining 31565 houses were to be replaced with disaster resistant housing with the help of World Bank.

In all districts where the scale of construction was high, especially in Nagapattinam, there were teams set up at the Administration level, to identify spaces and to initiate negotiations. The land so identified was then informed to the communities and their approval sought prior to the purchase. There are instances when the Nagapattinam Collector had to have about 8 rounds of discussions with the communities before a decision on the land identified could be reached.

An analysis of the sites selected with regard to the communities relocated reflects the special care taken to ensure the livelihoods of the fishing communities in almost all districts other than in the urban areas of North Chennai, Marina and Nochikuppam. However, in the case of North Chennai which is largely harbour based fishing, the logic can be that anyway the fishermen had to travel some distance to reach the harbor and so the displacement does not matter much.

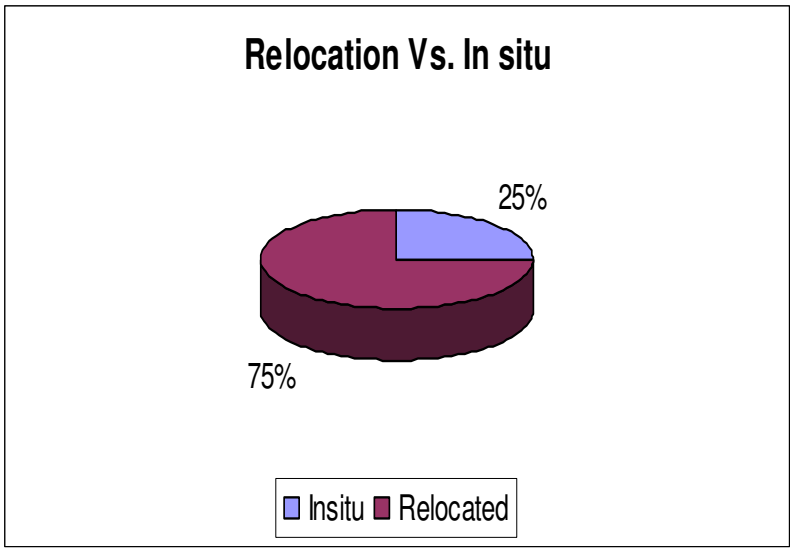
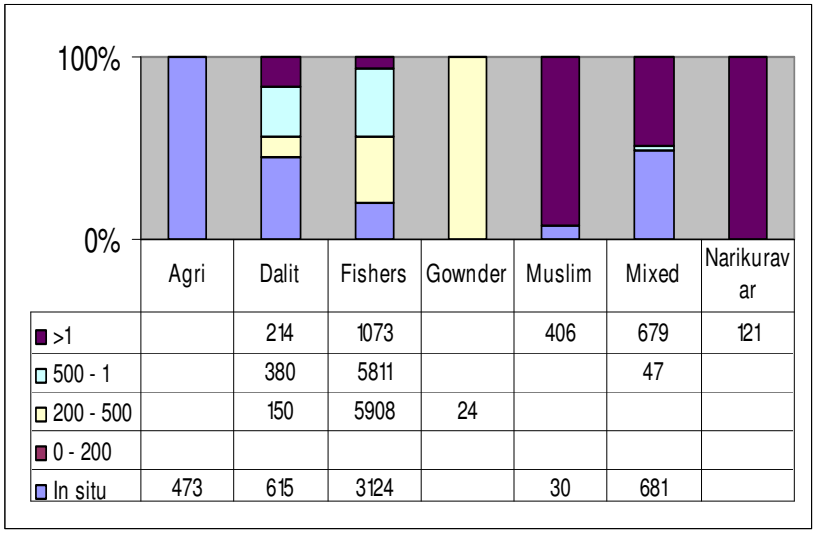


Figure 5.5: In-situ versus relocation in Nagapattinam (Courtesy NCRC Data)



	Agri	Dalit	Fishers	Gownder	Muslim	Mixed	Narikuravar
>1		214	1073		406	679	121
500 - 1		380	5811			47	
200 - 500		150	5908	24			
0 - 200							
In situ	473	615	3124		30	681	

Figure 5.6: Analysis of Relocated sites in Nagapattinam (Courtesy NCRC Data)

An analysis of the reconstruction efforts in Nagapattinam shows that 75% of the construction was in relocated sites with quite a large number of fishermen families (3124) and all agricultural families, opting for or eligible (as in the case of Agriculture based families) for in-situ construction.

The special care taken in assigning relocation sites is evident in the table above where 5908 houses of the fishermen families were in safe sites identified within 500 mtrs and an equal number well within a one kilometer range. For the 1073 families that had to be relocated beyond the one kilometer range, it was with the explicit approval of the communities who, for reasons of availing of better locations or having easy access to the sea front, chose the site albeit the distance.

The majority of the families who have been allotted sites beyond the one kilometer range are families from other communities, who have no imperative need for access to the seafront for their livelihoods.

Special sanction was also given to Nagapattinam to acquire wet lands, if necessary, as most of Nagapattinam, two-thirds, was below mean sea level and prone to water logging.

However, the same case does not apply to areas in Chennai, Kanyakumari and Tiruvallur, where the spaces are already congested and in-situ constructions were resorted to. More so is the vulnerable strip of densely populated areas between the canal and the sea in Kanyakumari, where, not only is further expansion improbable, but, the already existing houses are, even now, highly vulnerable. Many of the houses seen in Kanyakumari, Tiruvallur and Chennai were very close to the sea, sometimes even less than 50 mtrs, although they were protected by a sea wall.

Periyakuppam

Indira Gandhi Colony in Tiruvallur

Interestingly, the people of Thazamkuppam in North Chennai, had already identified land close to their habitation and requested the TNSCB for houses in 2003 itself. Of the total of 1000 houses in the habitation, about 465 houses were constructed by the TNSCB in the new site, called Tsunami Quarters, immediately after the tsunami. The remaining 50% are still in the old habitation, protected by the sea wall but awaiting their new homes.

In Puthur, Kottilpadu in Kanyakumari, IRE has been excavating sand from the beach for minerals from the last decade or so and the level of erosion is very high. There was a sea wall which also fell apart due to the erosion. Right now, there is only a road between the houses and the sea and the people are using sand as protection. They trustingly say that IRE has been very helpful to them in providing the sand, after their processing is done, to help in constructing a protective barrier. In- situ construction has happened even in these habitations raising questions of “is a disaster resilient house enough protection” against the fury of the winds or the tides?

Houses close to the shore, Kanyakumari

Although about 102 houses have been constructed in CRS Nagar for them, there are still houses in Kottilpadu, where around 20 houses have been reconstructed under the RGRP.

With a mix of such in-situ constructions as well as relocations, the number of enumerated fishermen habitations has increased between the 2001 Census and the 2011 Census. What does this mean in terms of services to the new and old habitations and will it, in the long run, only increase the fiscal load on the Government exchequer is a point worth considering. Or, should the logic of "an indivisible community" hold good for all relocations? Where is the meeting point between livelihoods and security of lives? The present level and strategy of constructions seem to be project led. Unless there is a comprehensive road map for development, the investments, though done, may be self-defeating.

5.5.3. Selection of NGOs as Partners in Reconstruction

Given the number and the different types of NGOs who had come in to support the reconstruction, the different scales, visibility, accessibility, types and conditions of the sites where reconstruction had to be done as well as the communities for whom the reconstruction had to be carried out, matching the sites to the NGOs threw up many permutations and

combinations. This was also complicated by the specific wishes of the Donors who indicated special communities they would like to work for.

The Nagapattinam Collector, with the help of the NCRC set up one-to-one meetings with all NGOs to decide this in the most amicable manner. The first requirement to even participate in the process was a written proof from the Donor, indicating their willingness to fund and the number of houses they would like to help construct. A list of all the sites were given and the NGO was asked to make their first, second and third choices based on their fund availability. Negotiations were held with the NGOs, in case of two or more NGOs showing preference for the same sites. This exercise, though time consuming, was transparent, participatory and resulted in building up the relationship between the District Administration and the NGOs.

A similar exercise was held in Cuddalore, where the District Collector followed a village based approach instead of a site based approach. He also initially asked for an EMD, to ensure the compliance and accountability of the NGOs, but later settled for just the MoU. Taking the Habitation angle into consideration, apart from the housing, the Collector of Cuddalore also entrusted the NGO with building of playgrounds and community halls in the villages selected by them.

Probably because of the reasons of much lesser number of houses that had to be reconstructed in these districts, or being urban areas and already grappling with slum clearance and housing problems in the same localities that also required post-Tsunami reconstruction, Chennai and Tiruvallur reconstruction was largely handled by the TNSCB.

In all cases where NGOs, or other Civil Society organizations, were part of the reconstruction activities, there was an MoU signed between the NGO/ CSO and the District Administration. Under this MoU, the Government would provide the land and the access roads, electricity connection, sewerage connection and water facilities while the NGOs/ CSO would construct the house, provide internal roads, internal drains and toilets. In low-lying areas, the sites had to be filled up to the requisite 5m above MSL which was to be undertaken by the District Administration.

5.5.4. Multi-hazard resistant and Appropriate Technology Selection

There were many stages of discussions with technocrats, research agencies like Remote Sensing Division of ISRO, academic institutions like the IITs, architects and engineers from well-known institutions like the Auroville etc., on the most appropriate technology to be adopted for the buildings and habitation planning. More than 5 such meetings were hosted at the State level by TRI-Net, bringing together a cross section of technocrats, bureaucrats, field level implementation agencies and policy makers, to understand the various hazards that the coastal areas are prone to and the mitigatory measures that need to be adopted while making the building safe, comfortable and low cost.

The State Administration had also set up a panel of eminent engineers to develop and design an appropriate model taking into consideration all the factors. Based on this, a document on “Guidelines for Construction” was released which detailed the materials, the features and the

non-negotiable disaster resilient features of the new house to be constructed. This formed a part of the MoU that was signed by the NGO/CSO partner.

The UNTRS, set up at the State level, ably supported the State Administration in this entire exercise not only till the development of a feasible model for a new house but also in retrofitting the older buildings, specially the buildings of life line services, including the hospitals. Instruction modules on incorporating disaster resilient features into construction, retrofitting of both RCC structures as well as traditional structures were brought out to help the NGOs/CSOs involved in the construction activities.

The technology required for sanitation proved to be the greatest challenge. The water tables being high in the coastal areas and prone to flooding, sanitation in the coastal areas had always been a challenge. There were more than 10 meetings at the State level, called by TRI-Net, TNTRC, UNTRS and the State Administration, and more at the district levels to identify the most suited technology. NEERI, Auroville, SCOPE, Paul Calvert and EXNORA were some of the experts who contributed to these discussions. STPs, Dry Composting and DEWATS were the technologies shortlisted and, as the State Government was responsible for sanitation at the sites, were left to decide which are-specific technologies they would adopt, based on the terrain, size of the habitation, budget provisions not only for the initial; investment but also for the continued operating costs.

5.5.5. Beneficiary Identification and Selection

The District Administration had already assessed the number of kutcha and pucca houses fully damaged and partially damaged within 100 m, 100- 200 meters and 200 - 500 m from the HTL. Apart from this, the Village Panchayats, both elected as well as traditional also had made their own lists. There followed a process of negotiation, at the local levels, between the NGOs in charge of construction, and the Panchayats in finalizing the numbers.

Giving credence to the old adage of Calamities being also opportunities, in almost all districts wherever NGOs were willing to construct additional houses, the District Collectors provided land for construction of housing even for those not directly affected by the tsunami. Socio-economically backward communities, who lived in dilapidated colonies built more than 10-20 years ago, tribal nomads like the Irulars, were some of the communities that benefitted from this humane approach to reconstruction. In some areas, even those who had only rented or leased the premises that were destroyed in the Tsunami were also given a chance to own their own house. However, there were interesting processes followed for such people who did not actually own a house that was destroyed by the tsunami- they had to contribute financially, either partly for the purchase of land, or pay for the patta, water supply etc. So, there were cases ranging from a Rs. 5000 contribution to a Rs. 30,000/- contribution per family. Ironically, this also led to some spurious organizations, fly-by-night operators, to collect money claiming to be an NGO constructing houses and then disappearing from the scene as it happened in a small village in Nagapattinam. The poor villagers could not complain to the higher authorities as they knew they were not eligible for housing.

In most fishing hamlets, where the traditional panchayats are strong, the decision on the total number of houses required was taken by them based on not just the current requirement but also the anticipated needs like sons coming of marriageable age and wanting a house of their own to move into. This happened largely in Nagapattinam as there were willing NGOs. In places like Tarangambadi in Nagapattinam, the entire habitation was rebuilt and they also were given additional houses also. The case of additional housing was not as evident in Cuddalore or Villupuram but was prevalent in Kanyakumari. One of the reasons for this can be that considering the scale of construction, a few more additional houses would not mean much more in terms of incremental expenditure but would make a vast difference in the lives of the people who already had suffered a great trauma.

The same is not the case with the ERTP/ VRCC/ RGRP schemes. The Government led constructions came under one of these schemes, based on the distance from the MSL. The houses to be reconstructed within 100 m of MSL came under the RGRP Scheme and the remaining under the ERTP scheme, although the community has no idea under which scheme they have been given the house. All the houses are called Tsunami houses but the communities feel that there is a difference in terms of floor space and overall budget, although they are unable to cite the reason for it.

There are families who claim they were on the initial list but are still awaiting construction, although from official sources we hear that the housing construction phase is over. One of the reasons for this could be the modality of Beneficiary selection. Under ERTP, RGRP as well as VRCC, the semi- permanent, temporary and colony type houses, more than 10 years old, built with government financing were identified and listed. This list was then given to the selected nodal NGO(s), contracted as the facilitator and the link between the communities and the Government, at the District level for verification. The NGO validated the ownership on this list by checking documents like the ration card/ voter's card, house tax receipt, Electricity bills, land tax, patta, and bank account details. Only those who had all the relevant documents were approved and this revalidated list was then sent by the DIU to the Panchayats for approval of the Grama Sabha. Only once this approval was received, was the construction initiated. However, the communities are not aware of this process and the ones who have not as yet received housing are waiting hopefully for the next list of approved reconstruction.

To further complicate matters, the State Government has also initiated Green Housing (Pasumai illam) in the villages and again through the Rural Development Agency. As far as the people are concerned, they just need good housing whatever be the scheme it comes under. However, the final decision making at the Grama Sabha is not informed decision making as approvals have been given blindly while anticipating further lists for those left out in the current list.

5.5.6. Beneficiary identification in the Urban areas

The reconstruction in the Urban areas have been mainly by the TNSCB. They already have a list of beneficiaries identified under their slum clearance programme. Sites also have already

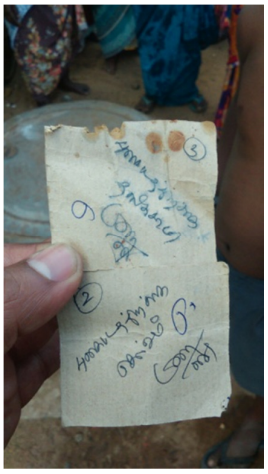
been identified and the new list, of the Tsunami affected, have been incorporated into the already available list for these areas. Relocations have not been easy as is seen by the Marina Beach case where there are about 150 fishing families still living in temporary shelters as they have either not been assigned houses in the tenements on the beach front or have been allotted houses in the Kannagi Nagar tenements which are 12 km away from the sea.

Inhabited Temporary Shelters of fishing community in Nochikuppam

While their issue has been a bone of contention even before the tsunami, the fact that this has not been solved till date is tragic, especially given the fact that they have been the most affected by the tsunami and the construction of the tenements have been done under the tsunami project. However, more tenements are being planned in the adjacent locality and, hopefully, they will get houses.

The same is the case in Villupuram as well, where reconstruction has been using the tsunami funds but the people relocated or given new housing have not been the people either directly affected or the most vulnerable as is the case seen in Indira Gandhi Kuppam. Indira Gandhi Kuppam is a habitation made up of 8 streets and is separated from Burma Nagar by a road. Indira Gandhi Kuppam is in a narrow stretch between thickly populated Burma Nagar and the sea wall on the other. Fisher-families reside in streets 1- 5 and OBCs, mainly daily wage workers reside in the streets from 6-8. The fisher families have been given houses by an NGO. The Government led reconstruction programme has done in-situ reconstruction for some of the houses in the remaining streets but the most vulnerable, those closest to the sea wall are still waiting with tiny scraps of paper which were given to them as assurances that they were eligible for housing. Is this because they come under the list of not directly affected by the Tsunami? Who do they approach for their grievances? TNSCB has an overall plan of relocation/ restoration of slum settlements. Does the disaster angle get lost when super-imposed on their larger plans?

Houses in Indira Nagar



The Long Wait

House in Indira Nagar

While slum relocation is also logically reduction of risks, the need to prioritize the tsunami affected gets diluted in the bargain, especially, if it also requires special considerations like access to the sea front. It may well be that the Government knows what it is doing and is working on a well thought out plan. However, it is getting increasingly difficult to identify who in the Government can give answers to the worried families who are living very close to the sea and can lose their houses to erosion or waves at any time. SDMA says they are only responsible for the initial beneficiary list, Rural Development Agency says the scheme is over and they do not know why and how the exclusions took place and the communities are

reduced to just waiting or resorting to unfair practices to avail of housing. Once the furor over the disaster has died down, it is truly "back to business" mode albeit in a negative manner.

5.5.7. Grievance Redressal Mechanisms

Nagapattinam Collector had ensured that the final list of beneficiaries was displayed at the Grama Panchayat office at least a week before the actual allotment. Village level Grievance Redressal Panels were formed, consisting of Elected Panchayat Leader, Traditional Panchayat Leaders, NGO Team Leader and NCRC Representative to deal with the local village level grievances, if any. In places like Tarangambadi, where the NGO SIFFS, with its long term association with the fishing communities of this area and the extensive social survey undertaken with the communities prior to start of construction activities, had already amicably allotted the sites to the families even prior to construction, there were no grievances at all and transition from temporary shelters to permanent shelters was very smooth. Although allotments were not done so early in the other sites, wherever the NGOs/ CSOs had worked very closely with the local communities, such problems were very rare as was seen not only in Nagapattinam but also in other districts like Kanyakumari, where the Church already had very close ties with the communities and the predominant nature of the Church based institutions in construction activities precluded later day grievances.

5.5.8. Construction Quality Assurance:

In 2006, NCRC, with the support of the UNTRS, conducted a Third Party Audit of the quality of construction till date. This was done across the three districts of Nagapattinam, Kanyakumari and Cuddalore. The State Administration and the District Collectors were part of the study and receptive to the recommendations. The UNTRS and the State Government repeated this exercise in late 2007 also.

Following the first Third Party Audit, the NGO Coordination and Resource Centre set up the Shelter Advisory Group and the Shelter Support Group to concurrently monitor the construction activities as well as provide hands-on support wherever found necessary at the field level. The Shelter Advisory Group was led by Prof Shantha Kumar, Emeritus Professor of IIT Madras and Advisor to the Government of TN on Post-Tsunami Reconstruction.

5.6. Present Status in Shelter

The team visited sites in Nagapattinam, Cuddalore, Kanyakumari, Villupuram and Chennai to assess the current status of the habitations. The communities requiring housing in all districts other than Chennai and Tiruvallur were predominantly in the rural areas.

In some of the sites visited, it was very difficult to identify the tsunami houses because of the changes that have been brought in. The houses in some of the sites in the rural areas of Tiruvallur, Cuddalore and Tarangambadi in Nagapattinam have not only new facades but also expensive extension activities both horizontal extensions as well as vertical. Most locations visited in Kanyakumari and Cuddalore had compound walls and lots of trees and plants.

Adding fences or compound walls was the most frequently observed change in the houses sampled. These ranged from simple thatch and bamboo fences to concrete walls with metal gates. Thatch roofs over patios or over the main roof were also seen in over one third of the houses. Such roofs were used to create additional shaded living and storage space. A quarter of the houses sampled had added an area for cooking separate from the original tsunami house. Many families cook using firewood, and therefore prefer to cook under a thatch roof to prevent smoke damage to the house.

A modified Tsunami House in CRS Nagar, Kanyakumari

View down the lane in CRS Nagar, Kanyakumari

Internal Modifications done in Leo Nagar in Kanyakumari

Lourde Matha Colony Melemanakudi, Kanyakumari

Thuraimukha Theruvu, Kanyakumari

House in Tarangambadi, Nagapattinam

Table 5.3: Types of Investment

Type of Investment
Added fence/compound wall
Added doors and/or windows
Added kitchen/cooking area
Thatch roof over yard and/or roof
Added rooms
Replaced flooring
Internal work (e.g. shelves, internal walls)
Repair/maintenance work (limited)

Unfortunately, only a few of the respondents reported doing any maintenance work since moving into the house. The most common maintenance was repainting of houses, but others re-plastered walls and/or floors. Only a few houses reported plastering or adding weatherproof tiles to prevent leaking ceilings. No respondents seemed aware of any necessity for regular maintenance. There was an expectation that the Government or the NGO would do it for them.

As mentioned in the Study done earlier by Bedroc, "Approximately 80% of the respondents had thatch houses pre-tsunami, 12% had tiled houses and only 8% had concrete houses (the majority of which were government colony houses provided to fishermen). Therefore, the beneficiaries had little experience with concrete construction or maintenance practices"

Most of the investments have been done in the new houses and not in the older ones wherever still existing. The most common reason cited for this investment is wedding in the family. Thus, an RCC house is considered an indication of social upward mobility, and given a choice, the community would still prefer an RCC construction to a semi-pucca or a more eco-friendly construction built with locally available material. Given this preference, the technology for large scale coastal constructions will be challenging**.**

5.6.1. Occupancy Rates

Occupancy rates are very high in sites constructed for the socio- economically marginalized. For them, it is a dream come true. However, the occupancy rates in sites for fishing communities, is also dependent on the distance from the sea. The occupancy rates in Kannagi Nagar is very poor where the distance is more than 12 km.

Unoccupied houses, meant for Fishermen families of Notchikuppam in Kannagi Nagar

Some of the new houses are occupied by other married members of the family or rented or, in some cases, even sold. The house rents range from Rs. 750/- to Rs. 1000/-. The purchase value of the houses range from Rs. 5 lakhs to Rs. 10 lakhs. Some houses are also given on lease for two or more years. The reason usually cited for sale of house is emergency need for money.

5.6.2. Housing Quality

As the number of houses constructed was much more in Nagapattinam (20192), and Cuddalore coming next with 2323, in the first phase, the scales, the locations, the implementers and their available work force and the time frames within which this had to be completed need to be taken into consideration while making comparisons. Understandably Nagapattinam would have faced far more difficulties in ensuring that, given the constraints, the housing was completed by 2007/8. This was reflected even in the construction quality of the houses when visited ten years after the tsunami.

A detailed site survey done by Bedroc showed that "The major types of damages reported were: ceiling leakages or cracking, erosion of cement, cracks in walls and damages or erosion of floors. The most common problem was ceiling leakage during rains, which was reported in over 50% of the samples houses. This was a particular problem in Thethi, Viluthamavadi North, Ambedkar Nagar, Melevanjiore 1, Melevanjiore 2, Vettakaranirapu and Keelamoovarakari. This is a result of inappropriate sloping of the roof such that rainwater does not drain quickly, but instead stagnates, or a result of a lack of appropriate weatherproofing of the ceilings. This is a serious problem as leaking indicates that water is seeping through the cement ceiling, which can lead to corrosion of the steel reinforcing bars."

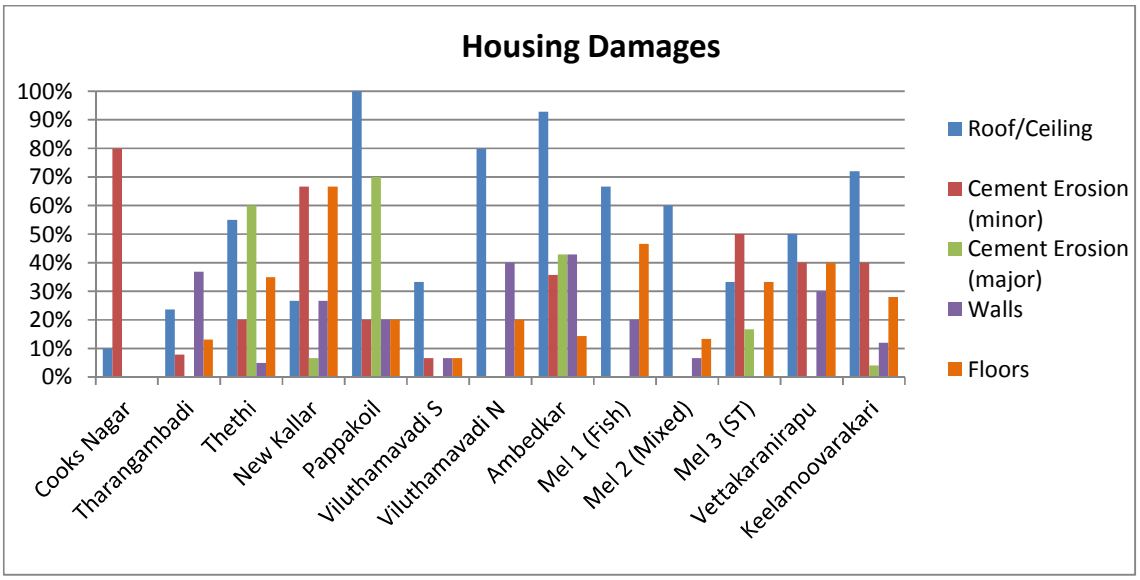


Figure 5.7: Housing Damages

The most common damages seen even in the other districts were ceiling leakages or cracking, erosion of cement, cracks in walls and damages or erosion of floors. The most common problem was ceiling leakage during rains, which was reported in over 75% of the samples sites. The prevalence of leaking roofs implies that waterproofing of roofs is a widespread problem, which should be rectified in order to prevent further collapsing of ceilings.

Roof Leakages due to poor water proofing of roof

In extremely drastic cases like in Ambedkar Colony in Nagapattinam the ceiling cement has collapsed and the damaged rebar can be seen clearly. Such houses are no longer used by the beneficiaries who are instead living in extended thatch rooms.

Collapsed Ceiling in Ambedkar Nagar

The second most common problem observed was either minor or major cement erosion of cement walls. The designation of "major" cement erosion was used when the walls were eroded to such an extent that the underlying masonry or rebar was visible. This could be caused by weather conditions (such as stagnant flood waters or salt content of the air) or by poor cement mix during construction. . Further study would be necessary to determine the cause of this cement erosion.

Major Cement Erosion in Thethi House

Erosion in Indira Nagar Colony

Cement Erosion in Thuraimukhatheruvu

The other common problem seen is cracking in the roofs or walls. However, the team was not technically qualified to ascertain if this was a structural damage or a cosmetic one. A detailed study would be required to ascertain the different types of damages and the solutions.

Cracks in the Wall in Indira Gandhi Colony

In one site, where the door and window frames were made of concrete, probably to save costs, there were cracks developing in the frames and they were unable to lock the door leading to security problems. Replacement of the door would not help in this case and the frame also could not be repaired in isolation.

Cracks in the RCC Window Frames in Ernavur Kuppam

Flooring Tiles in Leo Nagar

Erosion of soil under foundations was not common, indicating that foundations were built properly. Except for one site in Nagapattinam where the flooring of one row of houses had collapsed due to erosion. This site was close to a canal and the technology adopted probably did not take into consideration the effect of the flow of water in the canal on the soil.

Erosion in Kameswaram

Collapse of Flooring due to Erosion in Kameswaram

Lack of awareness on proper maintenance and timely repairs, poor selection of technology and materials, not factoring in the adverse climatic conditions- all these have singly or jointly contributed to the current condition of the houses.

Is this due to the rushed reconstruction? Or poor workmanship? Or lack of technical skills? Or even cutting of corners? How bad are the damages and what does this mean for both the people as well as the Government? There are cases where the communities have already requested the TNSCB to allot them new houses. Is the Government responsible for the upkeep of the houses? If not, once these houses are damaged beyond redemption, will the government be responsible for providing new houses? These are all questions that need to be answered before looking at large scale reconstruction on a blueprint that is not appropriate.

Another factor that comes to mind is the experience and the long term stake of the entity constructing the house- the construction quality is still holding good in areas where TNSCB has constructed or where a civil society organization has a long term stake in the area. There have been anecdotal evidences of NGOs making visits even 5-7 years down the line and

providing services for repairs- however, that is the case when there is continued presence of the NGO anywhere in the district. Similarly KSSS has ties with the communities - that go beyond housing. While they do not directly help in repairs or maintenance, they motivate the Village Development Committees to seek help of the Panchayat or other mainstream organizations for help. Maybe the Collector of Cuddalore was right when he initially insisted that the NGOs provide EMDs.

Although there were such community based committees formed in all sites, none of them are functional, except those in Kanyakumari. Again, the continued presence of KSSS and the involvement of the Committee in matters other than merely housing, has given it a continued relevance.

5.6.3. Drinking water

Most sites visited had problems with drinking water supply. The NGOs had installed hand pumps in all habitations. Increasing salinity of the water, especially during the summer months, made this water unpotable. The communities resorted to purchasing potable water at prices ranging from Rs 100 for 750 litres of water to Rs 250 for 750 litres. Private suppliers run tanker service for supply of water to these habitations.

Although many of the habitations are linked to a larger piped water supply scheme of the government, the supply is erratic ranging from once in two days to once in five days and even then the pressure is not good enough for all houses to get adequate water.

Cans of water outside a building in Kannagi Nagar, Chennai

In the tenements of Kannagi Nagar, the water is available only through hand pumps. So the families have invested in two tanks, one at the ground level and the other at the roof level, and a motor of 0 .5 hp capacity. The water is first collected in the ground level tank and then pumped up to their tank on the roof from where they are assured supply throughout the day.

5.6.4. Sanitation

All the houses visited had toilets attached to the house. In some cases the toilets had the door opening into the house whereas in some, like in Cuddalore where the toilets were built in such a way that the door led outside the house. These changes were based on the cultural preferences of the families.

As per the MoU, the NGO only had to make the sub structure and the super structure of the Toilet. The local administration was to provide the septic tank or any other mechanism for the removal and treatment of the sewerage. Hence the NGO built a small leech pit or a septic tank that could later be connected to the common drain after the system was set up by the local Administration. Unfortunately, despite many meetings and discussions, this system has not been set in place in majority of the areas. The final decision was that STPs would be set up in large habitations and septic tanks for individual or a cluster of houses in smaller habitations. This was not completed.

What was seen commonly across the districts was the poor usage of the toilet facilities. The men in all sites, and some of the older women still continued with their practice of open air defecation. Only Kanyakumari showed a trend of increased utilization of toilets. Tarangambadi in Nagapattinam had a focused intervention for about a year after the relocation, to encourage safe sanitation practices. The usage here has gone up but is still not universal.

The reasons cited for low utilization are:

- Lack of water
- Quick filing up of the leach pit/ septic tank requiring frequent clearing
- Hesitation to use the toilet which is inside the house
- Young girls feeling shy to use the toilet when men are in the house or even in the vicinity

As there is water available, albeit saline, which can be used for the toilets, lack of water does not seem a valid reason. However, the costs incurred for the frequent clearing of the leach pit/ septic tank is a genuine reason as the frequency ranges from twice a year to once in two years. The charges per clearing also range from Rs 1000 per trip, in Nagapattinam and Cuddalore to Rs. 3500 per trip in Chennai and Rs 4000/- in Kanyakumari.

The high water table is also a reason for the quick filling up of the leach pits requiring cleaning. So, if it is not used, then overflow would not be a problem.

5.6.5. Solid waste management

One good practice seen has been in Melemanakudi in Kanyakumari where solid waste management has been mainstreamed with the Town Panchayat system and is removed on a daily basis. In Tarangambadi in Nagapattinam and in Kanyakumari, there are units set up for the processing of the solid waste and conversion to organic fertilizers and was used as long as the NGO in charge of it was operating it. Now they are dysfunctional. Most sites visited just throw away their waste into the closest dumping space or burn it.

5.6.6. Wastewater management

Almost all sites had drains built on the sides of the roads for wastewater management. But they were not in use as they were getting clogged. As the drains were in front of the houses, wherever there were open drains, people did not like other people's waste water flowing in front of their houses and blocked it. In places where the drains were closed, the frequent clogging of the drains and the overflow in front of houses was another issue that frequently led to altercations and hence even these were not used. In Muttom, the Panchayat had a drain running in the centre of the road.

5.6.7. Access Roads

The internal roads were laid by the NGOs and the main access roads by the local administration. The roads in most sites seen were still in fairly good condition. Wherever repairs were needed the communities had approached the local elected Panchayats for the same. In some cases the roads were repaired and in some the Panchayats declined citing lack of financial resources.

What was interesting to note was that despite Village Development Committees and community based fora set up for the management of the habitations, the people expected the Panchayats or the NGOs to take care of communal problems. There were no attempts seen anywhere from the side of these committees to find local solutions to their local issues.

5.6.8. Community Amenities

All of the communities visited had petty shops with basic household goods and some groceries. The availability of amenities such as schools, ration shop, temples and grocery shops was generally related to the size of the community. In cases where all the families did not get houses, the families in the relocated site have to come to the original habitation for their ration. However, no one spoke of this as a major issue.

There were playing grounds in almost all large sites but none of them were functional. One of the reasons cited was the water logging in these areas. Considering the fact that large tracts of land were available only in uninhabited areas, which were uninhabited because of the low terrain, care could have been taken to ensure that the play grounds were well planned instead of just placing some play materials like swings and slides in an enclosed space.

Same is the case with the community halls. In very few sites have the community halls been used for weddings and public functions. They prefer the larger and more ornate Marriage Halls in the closest urban area.

The fish net mending centres and the auction halls are being utilized and maintained. But same is not the case with the solar dryers that had been set up. In no site visited was the solar dryer being used. The paucity of space within the dryer for large volumes of fish is one of the reasons and the other is the additional labour required to move the trays across the layers in a cyclical manner. They find it far more convenient and quicker to use the open sandy spaces.

5.6.9. Impact of relocation on Livelihoods

The special care taken to ensure that the fishing communities were not relocated very far from the shorefront has had its advantages and the men continue going to the sea. There are larger development aspects, like the harbours, and the sea walls that are anyway forcing the fisherman to travel more for his livelihood and they are adjusting to this. The women have a problem with the distance as it forces them to spend more time on the beach waiting for the fish landings. When it was closer home and in visible distance, they could continue their domestic activities till the boats landed. This is forcing the women to move out of their homes earlier, giving them lesser time, for their domestic work. Again, with the increase in

centralised fish landings due to the construction of harbours, this is a change that was inevitable.

However, there was an interesting factor brought up by a Muslim Community woman, who had her old house in Nagore, very close to the Dargah. She would operate a small shop, from her home, selling sweetmeats and cool drinks to the tourists during the season and make a living out of that. After she was relocated, her home is no longer on the route to the Dargah and she has lost her business. Cases of such livelihood losses have not been studied in great detail.

5.7. Best Practices

Because of the large number of houses constructed and the fact that many NGOs and other organizations were involved, there was a great variety in the practices with respect to permanent housing. Much of the housing was contractor driven; and with time pressure to complete the projects, definitely there were many short cuts that were taken. However, there were some very interesting practices that have been cited and include the SIFFS model. This organization that has been working with fishing communities of south India for many decades built over 2000 houses in Chinnangudi and Tarangambadi in Nagapattinam and Poothurai in Kanyakumari. The focus was entirely participatory with involvement of the community right from the selection of the plan and design of the houses which took into account the choices and aspirations of the villagers. The construction method followed was to build in small clusters of 25–50 houses so that the project which involved building a large number of houses was manageable. Each cluster had a cluster committee (including a woman) as well as a paid volunteer and an engineer in charge of construction quality. Training was given to cluster committee members, volunteers and engineers to assess construction quality. The road map for participation can be described as shown in Figure 5.8 (Lakshmi and Babu 2010).

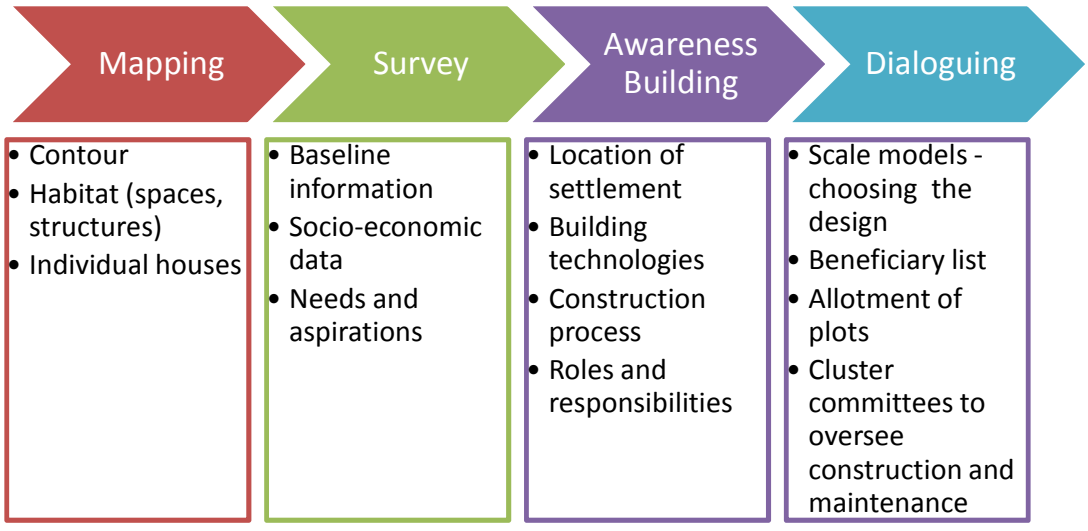


Figure 5.8: The Four Major Areas of Participation

The social intermediation teams worked continuously with beneficiaries with the model houses. Being informed about the location of their houses as well as their responsibilities in the house ensured 'ownership' feeling and commitment over ensuring quality in construction. The participatory approach took time and effort but was worth it in the long run with high satisfaction levels.

House in Tarangambadi, Nagapattinam
The 'SIFFS' board has been highlighted by the owner

5.8. Conclusions and Recommendations

5.8.1. Temporary Shelters:

As also remarked by one of the officers of the TN Govt., the temporary shelters, provided post-tsunami, was the single biggest blot on the otherwise successful and effective responses of the Government. While confidence in capacities is a major plus, the experiences of previous disasters would have given an understanding of the time scale necessary for such large scale reconstructions.

Based on this understanding, the Study Team felt that:

- The scale of reconstruction should be taken into consideration while designing temporary shelters.
- The communities should be involved in planning, designing and constructing these shelters, preferable owner-driven

- These shelters should be constructed with locally available, eco- friendly material to ensure easy repairs and maintenance, thereby reducing the load on the Government or NGOs/ CBOs etc
- Community based mechanisms for shelter management, with one Government Official as a nodal person for each site
- Wherever possible, families should be given an option/ encouraged to move into rented premises with a guarantee of being eligible for new houses

5.8.2. Permanent Housing

Overall, acceptance of the tsunami houses was high in nearly all of the communities visited. Relocation did not prove to be as big a problem as envisaged due to the pro-active measures put in place.

The biggest quality issues in the tsunami houses were leaks from ceilings and erosion of the cement walls. In order to minimize such problems after future construction, community members should be educated in maintenance practices. In particular, if beneficiaries need to weatherproof the cement ceilings, they should be informed of the proper methods for doing so and the expected maintenance cost. A detailed study on the damages is required to understand issues of technology selection, design selection and material selection. This will be especially useful for the Government in planning their mass housing strategies.

Provision of basic services like water, sanitation and sewerage has been a failure largely due to failure to identify the appropriate technologies as well as failure of the Government to synchronise activities with the housing construction processes. These areas need to be given more importance during planning and execution. Solid waste management and wastewater management are still extremely rudimentary and awareness building without providing support services is not the answer.

The responsibility of the State in mass housing, the approaches, the processes, the technologies and the timeframes needs to be thought out in greater detail. Community participation and decentralization should, to a large extent, bring in transparency and accountability. Expertise and Accountability of the agencies involved in construction activities is another area that needs to be studied in greater detail, otherwise, post-construction services will become a major drain on the exchequer.

The shifting or dilution of reconstruction focus, as seen in the urban resettlement planning, is a matter of concern. The plethora of schemes and implementing departments is adding to the woes of the families who are still awaiting allotment of their houses. Clear, unambiguous information dissemination to the affected population is of as much importance as is reconstruction of houses.

The current strategy of in-situ reconstruction in areas close to the beach, but protected by sea walls, needs to be revisited, in view of the cement erosions and damages to walls that is being increasingly noticed.

The increased trend of erosion in the 50 m gap between 500 m of sea walls noticed in many places is also a matter of concern and needs to be addressed.

Based on the above, the Team recommends:

- Clear Criteria for beneficiary selection
- Systems for dissemination of timely information to the affected communities
- Single window system for the communities to access, even if the funding partners differ
- A detailed study on the present status of shelter, especially damages
- A consultation process with technocrats, bureaucrats, field implementers, NGOs to understand the implications of the study and the impacts on mass housing, especially in the coastal areas
- This Study should also look at the viability/ safety factors of in-situ reconstructions in habitations very close to the sea wall to feed into technical, material and design changes for future constructions
- Urban resettlement issues, especially when combined with the larger development process, requires a deeper understanding and planning
- This should be taken up as a separate focus area and activities planned for early completion.
- Implication of the analysis on the types of agencies involved in the construction activities to underpin the criteria for selection of NGOs/ CBOs/ other players in such construction activities
- Clear guidelines and instructions have to be provided to the families on the periodic maintenance of housing as welkll as infrastructural facilities. The roles and responsibilities of the agencies involved and the families occupying the houses are, as yet, unclear to the people in many of the habitations visited.
- Periodic social audit to understand the remaining and emerging issues

6. SYNTHESIS AND CONCLUSIONS

6.1. Introduction

India was one of the countries most affected by the Indian Ocean Tsunami of December 26, 2004. Three Indian states of Tamil Nadu, Kerala and Andhra Pradesh and two Union of Territories, Andaman & Nicobar Islands and Puducherry were affected. If the Andaman Islands were closer to the epicentre of the undersea earthquake, it was Tamil Nadu that had the highest fatalities and an enormous loss of property and infrastructure on the coast. With a thousand kilometre coastline and home to India's largest marine fishing community, the story of Tamil Nadu's recovery from the tsunami has great significance from many points of view. In particular, it is of great interest to all those concerned with disaster preparedness and management and those concerned with coastal and fisheries development and management.

This study carried out in January-February 2015 focussed on the two major sectors that were the most important in terms of damages and recovery efforts: Shelter and Fisheries. The methodology used included a desk study of available literature as well as field visits to the tsunami affected areas in Tamil Nadu.

Chapter 1 gives an overview of the fishing communities of Tamil Nadu before the tsunami followed by information on the tsunami of 26th December 2004 that devastated the shores of Tamil Nadu. Chapter 2 summarizes the methodology used in the study. Chapter 3 talks about the Actors and their response. Actors here include the state government as well as the NGO, CSO and others who played an important role in the various stages of the relief and rehabilitation process. The coordination by the NCRC in Nagapattinam has been cited extensively as one of the key game changers that ensured building back better. Chapter 4 focuses on the fisheries sector while Chapter 5 is about the housing and rebuilding of houses after the tsunami. This chapter is a summary of findings of the study and some conclusions.

6.2. Findings and Conclusions

6.2.1. Fisheries

The tsunami took a heavy toll of the fisheries sector. After loss of lives and homes, the biggest damage was to the fisheries sector. In fact, the impact on fisheries livelihoods was more pervasive than that of loss of lives or homes. In many areas, where the tsunami waves did not lead to deaths or destruction of houses, boats and nets suffered heavy damage. Fishing virtually came to a standstill for a considerable period on the entire Coromandel coast (Pulicat to Kodikkarai) and the deep south (Tirunelveli district and the southern part of Kanyakumari District)—around 50% of the Tamil Nadu coast. Fishing infrastructure also took a heavy beating with destruction of harbours, landing centres, link roads, etc. Given that the total craft population in 2000 was 50,000 including a total kattumaram population of 27,000, damage figures of 36000 indicate an extremely high percentage of craft being affected by the tsunami wave. Losses other than hardware were not seriously assessed. These included livelihood losses to all those in the value chain.

The NGOs and corporates who had arrived in large numbers brought an agrarian rationality rather than a fisheries one. They saw giving boats as the equivalent of providing goats, cows and poultry to the poor for "income generation". They saw providing motor boats to replace sailing boats as upgrading the farmer from a bullock cart to a tractor. The fisheries department was clearly the main agency deciding on policies for fisheries rehabilitation but it found it difficult to articulate a clear policy that would encompass all the actors involved in fisheries rehabilitation. Lacking a vision or policy for sustainable fisheries, it decided to do its bit and let the others do what they wished in consultation with the community. . There were some dissenting voices from fisheries NGOs like SIFFS and ICSF, and coordinating bodies like NCRC and subsequently, the FAO gave its first advisory in February 2005 cautioning governments and NGOs against increasing fishing capacity in the tsunami affected areas.

Boat and engine repairs did enable fishers to return to the sea but this was soon halted when it was decided across the coast that fishing would resume only after all fishers got boats. The Government came up with G.Os on repairs and replacement of boats quite early on and announced different packages for Kattumaram, Vallams (canoes), FRP boats and Mechanised boats. The NGO boat distribution was largely characterised by lack of technical understanding and procurement systems that were unrealistic. Quality control was largely absent and often rush jobs did not allow for proper setting of the polyester resin. NGOs and corporates went in for group ownership for new boats but most boats distributed on group basis eventually ended up with individuals.

Mechanised boats, which required more than Rs.10 lakhs to replace, were seen by the NGOs as a programme for the better-off fishermen. Hence, rehabilitation of the mechanised sector became the exclusive responsibility of the Department of Fisheries. In Nagapattinam, the large package encouraged the mechanised fishermen to scale up trawlers and shift to steel boat technology—another first in Tamil Nadu. The loan programme eventually became a grant programme given the poor track record of the fishermen vis-à-vis banks.

The traditional village organisations played an important role in negotiating with the outside world, with both the Govt and NGOs, almost all aspects of relief and rehabilitation in fishing villages. Their mandate was to ensure that all the families in their village received their fair share of the aid that came in. There were conflicts here and there as well as reports of replacement of panchayat heads (or parish priests in Christian communities) due to community dissatisfaction.

In comparison to boat and motor distribution, net distribution was somewhat low. The fact that each fisherman may have his own preferences when it came to fishing nets—in terms of specifications or in terms of setting—was ignored resulting in bulk procurement of nets that were often found inappropriate or unsuitable forcing owners to find money for this.

Supply of ice boxes was one of the successes of equipment distribution. Today, the ice boxes are used by most of the motorised FRP boats for preserving their most of their valuable catches like shrimp or cuttlefish as well as by fisherwomen involved in fish trading who are able to keep the unsold fish longer, without being forced to dry it. Solar driers caught the

interest of some NGOs and they set them up in a number of villages along the coast with a view to helping fisherwomen groups dry fish in a hygienic manner and get better value for their dry fish products. Unfortunately, they have been a total failure. Simple cement platforms for drying fish, net mending sheds, small auction halls and such structures are much more popular than the larger sheds/ halls, even if they have come up only after elaborate community consultations. Such large projects are prestigious and the village leaders rarely say no to them, even if they are doubtful about the need.

Sea safety training programmes run by SIFFS through the ADB funded TEAP was well received but the idea of linking the training to sale of sea-safety devices with limited subsidies did not get approval. Large scale distribution of life jackets for small scale fishermen has largely ended up in tourist places in many parts of south India.

The biggest post tsunami investment by Government in the fisheries sector has been the building of a large number of fishing harbours and fish landing centres along the Tamil Nadu coast. Initially, it was part of the World Bank's ETRP and now it is being continued through the World Bank's CDRRP. In all probability, the investment on fishing harbours and fish landing centres under ETRP and CDRRP will outstrip the entire investment made prior to the tsunami in the state of Tamil Nadu.

6.2.2. Shelter

Damages: With fishing hamlets located mostly within 500 m of the shore line, the houses of fishermen were damaged/destroyed by the tsunami, on an unprecedented scale. The damages were assessed at over 53,000 with around 45,000 of them fully damaged and the remaining partially damaged. Considering that the old houses were mostly of the thatched 'kutcha' type, new housing rather than repairs dominated the rehabilitation scenario.

After the initial relief phase, the government, with the help of NGOs who had flocked to the scene, set up temporary shelters with a limited budget before moving on to the permanent shelter on a Public-Private-Partnership or PPP model involving NGOs and Corporate houses.

Temporary Shelter Phase: Going under the assumption that permanent houses would be quickly built, the government went ahead with temporary shelters built with corrugated bitumen sheets (RMP or "red mud plastic") and Casuarina poles. The temporary shelters were largely unsatisfactory as they had to be constantly repaired and rebuilt; many were located in low lying areas; the heat and humidity resulted in improvisation by putting a thatched layer on top of the RMP roofs to protect the inmates from the heat. Sanitation was a major problem. The majority of affected families spent three years in temporary shelters. It is estimated that temporary shelter eventually cost Rs.20,000 per unit and this amount could have been used for a more durable "transit" or "interim" shelter.

Permanent Housing: The policy for permanent shelter was clearly shaped by a number of influences (GO 172). Promotion of RCC construction and high technical specifications (multi hazard resilient construction) resulted in escalation in unit cost from Rs.50,000 to Rs.1.5 lakhs; most agencies in fact spent around 3 lakhs to meet the technical specifications and

build the prescribed 325 sq.ft house. The Government's PPP model allowed NGOs and corporate houses to build the housing units based on government specifications ; the government would provide the land free of cost and also provide other infrastructure. The houses would be insured for ten years from multiple hazards and all houses would be given in joint ownership to husband and wife ensuring that women have an equal right to a tsunami house.

The implementation of the tsunami shelter programme was a huge affair that started in mid-2005 and ended around 2011—a period of over 7 years. With surplus funds available, the government went in for a second phase of housing for those in vulnerable locations, albeit not affected by the tsunami.

Current status of the shelter: A review of scattered reports and a whistle stop tour of affected areas revealed some answers regarding the current state of the tsunami houses. In Tamil Nadu, the occupancy rates are high generally ranging from 80-100% in settlements visited across the coast. The lower end of this spectrum is generally in sites that are a bit farther away from the sea. Overall, the build quality as seen today after 5-8 years of construction appears reasonably good. An important exception to this is the housing in Nagapattinam where there is considerable variation in quality. Given that over 20,000 houses were constructed in Nagai district, this is a serious issue. The large scale of construction over a 190 km coastline without a sound technical support system has meant that the construction quality was not uniform. The low lying nature of the Nagai coastal terrain, poor soil quality that required strong foundations, and lack of local RCC expertise have all made achieving good quality of construction difficult in Nagai. On the positive side, Nagai also has some exceptional sites that are being projected as models for others to emulate.

There is considerable variation in building upkeep and maintenance across the coast. The range is from houses that have been completely transformed through owner modifications to houses that are in a dilapidated condition. Drinking water remains a problem in most settlements. Drinking water supply programmes had been implemented in most areas, but the actual availability of water is inadequate and water supply is erratic. Toilet usage is predictably low with the exception of Kanyakumari where a culture of toilet use precedes the tsunami and there was a genuine demand for them. Reasons quoted for non-use include lack of water for flushing and the low capacity of the leach pits that require regular removal of waste. Solid waste management is also not satisfactory. Barring a few examples, most communities still dump all the waste in some nearby open space or burn the waste. Waste water management is also weak in most places with the drainage system getting clogged and waste water overflowing.

Good access roads are generally available in all settlements though the quality and maintenance of the inner roads is variable. Common amenities like schools, ration shops general shops, fish mending halls, auction platforms, community halls and playgrounds are all available in most settlements. However, the Community halls in many places are not used as expected and playgrounds are often badly sited and not useable. For the overall upkeep and maintenance of the new settlements many new organisations—village development

committees—had been constituted but most seem to have faded away after the initial enthusiasm. There is clearly a local gap in terms of management of the new facilities.

When looking at Community satisfaction, it is important to say that most communities feel positive about the changes that have taken place and think that tsunami rehabilitation has been helpful in improving their lot.

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