

**IMPACT AND NEEDS ASSESSMENT OF TSUNAMI  
AFFECTED COASTAL VILLAGES IN CUDDALORE  
DISTRICT**

**MAY – JUNE 2005**

**DEPARTMENT OF SOCIOLOGY  
UNIVERSITY OF MADRAS**

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## **EXECUTIVE SUMMARY**

The devastation caused by the Tsunami on 26<sup>th</sup> December 2004, has left coastal lands flattened and billions of dollars worth infrastructure, economic assets and materials were devastated. It had severe impact on coastal fishing communities in Tamil Nadu destroying houses, boats, fishing gear, agricultural land and saltpans wiping out the livelihoods of millions of people. The ultimate goal of the project is to assess the impacts and the needs of the affected people, and develop rehabilitation and reconstruction framework for the community re-engineering work. The outcome of the survey will facilitate ADEPT in its endeavors of sector prioritization, resource identification and coordination of community re-engineering activities.

The objectives of the study were to:

- Assess the damages and losses incurred by the Tsunami affected coastal communities in Cuddalore district.
- Identify the specific needs of the different social categories to be incorporated in the rehabilitation and reconstruction activities.
- To develop rehabilitation and reconstruction framework for the community re - engineering process.

The multistage sampling methodology was adopted for the study. Based on the study objectives sample villages were chosen from the affected villages in Cuddalore. At the village level Schedules were used to conduct individual interviews and the key informants were from the community. All categories of respondents such as elderly, disabled, women who have lost the breadwinners and village panchayat leaders were interviewed. Focus group discussions were conducted across the section of social categories. Also interactive group sessions were held for children.

Based on the survey various issues on impact and the needs of the villages have been identified. Broadly issues related to damages, displacement, habitat development, infrastructural damages to the community, human toll and its differential impacts, loss of livelihood and on transit shelters etc have been studied. The needs related to each of these issues have also been discussed in the report.

Further specifying the guidelines for rehabilitation and reconstruction framework for community re-engineering has completed the purpose of the report. The framework is broadly on the issues related to site location, settlement layout, community infrastructure, transit shelters, livelihood rehabilitation, women specific needs and needs of children.

## **Section 1.0. Introduction**

### **1.1. Background**

A massive earthquake of magnitude 9.0 (USGS) hit Indonesia on 26<sup>th</sup> December 2004 at 06.58 AM and another earthquake of magnitude 7.3 occurred 81 km west of Pulo Kunji in Great Nicobar at 9.15 AM on the same day. These were followed by 115 after shocks, of which 103 were between 5.0 – 6.0 on Richter scale and 12 were more than 6.0. The earthquake set off the giant Tsunami with 3 to 10 meter height that traveled 2000 km across the Indian Ocean, the Bay of Bengal and beyond. The Tsunami first hit the Andaman and Nicobar Islands causing extensive damage, then spread along the narrow strip of land affecting 2260 km in the East Coast of India and penetrated 300mts to 3 km deep into the mainland causing extensive damages to lives, property and livelihoods. Within few seconds, thousands of lives were lost and hundreds of thousands of people were rendered homeless.

The devastation wreaked by the Tsunami, has left coastal lands flattened and billions of dollars worth infrastructure, economic assets and materials were shattered. It had severe impact on coastal fishing communities in Tamil Nadu destroying houses, boats, fishing gear, agricultural land and salt pans wiping out the livelihoods of millions of people. This killer wave devastated the coastal community and traumatized the fisher folk for whom Mother Sea was a source of livelihood and sustenance. Though several articles on impacts of Tsunami featured in the newspapers and many reports published by the national and international agencies, the full dimension of the disaster and its varied impacts on different social categories are yet to be comprehended with right perspectives. The post –Tsunami realities and needs have become the *overwhelming concerns of the international agencies, focus of the government and center of attention for civil society organizations*. But the detailed stocktaking of damages and community needs is the need of the hour in the context of micro planning and long term rehabilitation process. It is the duty of the state machinery and civil society organizations to ensure safe, secure and sustainable future for coastal communities. It does not just mean putting emergency measures and relief work in place. Competing priorities of the people need to be understood with proper perspectives to design long term rehabilitation plan. This led to the birth of the Academy of Disaster Management Education and Training (ADEPT) and its concept of Community Re-Engineering. ADEPT, in its sincere endeavor of reconstructing coastal communities, sought to generate information on damages and community needs. With the concern of social responsibility and social commitment, the Department of Sociology, University of Madras has responded to undertake the *Damages and Needs Assessment of Tsunami Affected Villages in Cuddalore District*.

### **1.2 Scope of the project**

A sound social management framework is the basic ingredient of the community re-engineering process. It should minimize and mitigate the adverse impacts caused by Tsunami. The ultimate goal of the project is to assess the impacts and the needs of the affected people, and develop rehabilitation and reconstruction framework for the community re-engineering work. The outcome of the survey will facilitate ADEPT in its

endeavors of sector prioritization, resource identification and coordination of community re-engineering activities.

### 1.3 Objectives

The primary objectives of the survey are to:

- Assess the damages and losses incurred by the Tsunami affected coastal communities in Cuddalore district.
- Identify the specific needs of the different social categories to be incorporated in the rehabilitation and reconstruction activities.
- To develop rehabilitation and reconstruction framework for the community re - engineering process.

### 1.4 Economic profile of the coastal communities

Cuddalore district had 44014 marine fishing folk living in the Coromandel Coast line. There are two major and 26 minor fish landing centres.

### 1.5. Fishing units

A fishing unit is composed of a boat and fishing gear. There are four types of fishing units used in Cuddalore district viz., (i) Catamaran with sails and small nets (ii) Catamaran with motor and nets (iii) Maruti boats with motor and nets and (iv) Mechanized boats. Catamaran is the traditional boat and is essentially a sailing vessel. Maruti boats are made of fibreglass and meant for use with motors. The catamaran and maruti boats are beach-landing boats and mechanized boat is much larger and requires harbour to land or has to be anchored at sea. Fishermen use out - board motors that can be fitted and removed easily. They are small and light diesel motors that have long shaft with propeller attached to them. These long tails are fitted on a metal bracket at the end of the Catamaran or maruti boat. There is a swivelling system that allows the shaft to be rotated horizontally for navigation and vertically for removing out of water.

Table No.1

Fishing Craft and Gears Used in Cuddalore District

SL.No.	Fishing craft registered	Number
1	Mechanized boats	975
2	Vallam	367
3	Catamarans	6549
	<b>Fishing gears used</b>	
4	Gil net	53355
5	Trawl nets	992
6	Shore seine	28
7	Long line seine	238
8	Others	1006

Source: Department of Fisheries, Govt. of Tamil Nadu (2004).

Fishermen owning catamaran constitute the majority group, as there are 6549 catamaran owners in Cuddalore district. There are 975 mechanized boat owners and 376 vallam

owners. Catamaran owners may be the majority group but mechanized boat owners are economically dominant and powerful group.

### 1.6. Fishing gear

Gill net owners constitute majority followed by the trawl net owners. Fishing gear used by the fishing community in Cuddalore consists of small gillnets, large drift nets, hook and line and trawl net. Gill nets are basically nets that are hung vertically in the sea and when a shoal of fish crosses them, they are caught in the mesh of net. Separate nets are used for different fish variety. The small nets are of nylon monofilament material and large nets are made with nylon multifilament. The small gill nets are essentially factory made. The large drift nets are long pieces of nets that are used in deep water to catch larger species. These nets can be more than a kilometer long and use of these nets need special skills. Hook and line fishing are hand lines as well as long-lines. Hand lines are just a few hooks put on a line and long lines are large number of hooks put on a long line with baitfish. Trawl nets are bag shaped nets dragged on the sea bottom with two wooden boats that keep the mouth of the net open. Gill nets are predominantly used by large number of fishermen due to affordability.

### 1.7. Fish production

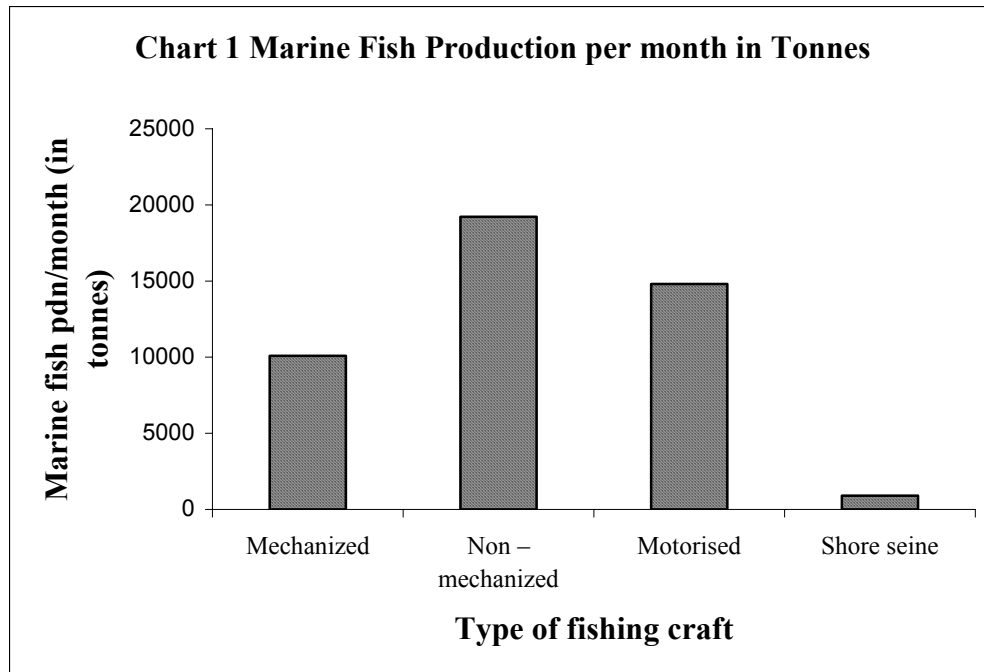
The various fishing crafts and the gears used in fishing have contributed to an overall fish production of 45023 tonnes of marine fish per month as per the 2004 figures (as in Table 2).

Table No. 2  
Fish Production by Fishing Craft & Gear in Cuddalore District

SL.No.	Type of Fishing craft	Marine Fish Production per month in Tonnes
1.	Mechanized	10098
2.	Non – mechanized	19210
3.	Motorised	14806
4.	Shore seine	909
	<b>Type of Fishing Gear</b>	
5.	Trawl net	3416
6.	Gill net	27704
7.	Seine net	1409
8.	Tangle net	7976
9.	Kit net	2851
10.	Hook net	1032
11.	Bag net	635

Source: Department of Fisheries, Government of Tamil Nadu (2004).

The following chart 1 depicts the marine fish production per month (in tonnes) in Cuddalore district. The various fishing craft used and the quantity of fish production from each of the fishing crafts shows the proportion of contribution based on each variety of fishing crafts.



It is clear that the use of crafts for shore seine gears is very less compared to other crafts among the fishermen. The fishermen use different types of fishing craft such as mechanized crafts, non-mechanized and motorised crafts and use different types of fishing gears. Comparing the fish production with the number of fishermen using different gears, it shows that in real numbers the gillnet users contribute more than 60 percent (27704) of total fish production per month. Other gears such as tangle net, trawl net and lit net contribute to around 31 percent (14243) of the total fish production. The other fishing gears used by fishermen such as seine net, hook and bag net contribute to another 8-9 percent of the total fish production.

Comparing Table 1 (No. of fishing gears used) with table 2 (Production by each type of fishing gear) it is interesting to know that in terms of economy, trawl net users produce more, where a single trawl net fishing gear produces 3.44 tonnes per month compared to a gill net fishing gear which produces only 0.52 tones of fish per month. Also the trawl nets have the advantage of capturing different species of fishes while gil net captures only specific species of fishes. In terms of livelihood more people are involved in gill net fishing while only a few are involved in trawl net fishing. Gill net fishing being widely used provides livelihood opportunities for large number of people in comparison to trawl nets.

### **1.8. Class structure**

Fishing community is divided into different class groups on the basis of the technology used on their boats. The people owning sailed Catamaran, Motorised Catamaran and maruti boat represent one group despite the differences in their income. Mechanized boat owners form a different interest group, as they constitute a upper class in the fishing community. The division within the fishing community exists not only on the basis of technology used but also due to the conflict of interest. The conflict of interest lies in the

fact that mechanized boat owners use trawl net that sweeps the sea bottom, affecting catch for the small fishermen.

The ownership between Catamaran and Maruti boat owners is essentially an individual or family affair. The crew will be composed of 3 to 4 family members as well as non - owners. The non – owners of the crew are not paid wages but share the net income after deducting the expenditure incurred for the boat. Boat owners may get an additional share. Sharing system exists even in the case of mechanized boat crew, but with difference in the proportion of share. The share of the boat owners is 65% and the crewmembers get allowance for trip irrespective of the catch. Thus fishing community has a class division on the basis of ownership and technology use. Any rehabilitation or reconstruction programme should take into consideration of the division of owners of non – mechanized boats and mechanized boats as well as the wage-earning workers. The wage-earning workers do not have any means of production excepting the labour, live below poverty line and deserve special attention in the rehabilitation and reconstruction activities.

## Section 2.0. Guiding Principles of the Impact and Needs Assessment

In view of the objectives set forth for the study, sample villages have been selected and appropriate tools have been developed for generating information on impacts and needs of the affected communities.

### 2.1. Sampling framework

Multistage sampling design was adopted for the study. At the outset, of the 51 villages that were affected by the killer wave of 26<sup>th</sup> December 2004, eleven villages have been selected for the survey, employing purposive sampling method. Selection criteria for the choice of the villages include the extent of damage, human toll and social structure of the villages to ensure the representativeness of the affected villages. The villages selected for the study are as follows:

Table No. 3  
Villages Selected for the Survey

SL.No.	Name of the village	Houses damaged	Human toll	Selection Criteria
1	AkkaraiGori	65	13	PD
2	C.pudupet	455	43	HD
3	Chinnoor	502	39	HD
4	Chittiraipettai	37	3	LD
5	Devanampatnam	761	101	HD/HHL
6	Killaimedu	66	5	Totally damaged
7	Periakuppam	7	Nil	LD
8	Pudukuppam	273	96	HD/HHL
9	Singarathoppu	251	20	PD
10	Sothikuppam*	Nil	22	LD
11	Thazanguda	130	35	PD
	Total	2547	377	

Source: [www.cuddalore.tn.nic.in](http://www.cuddalore.tn.nic.in)

**HD:** Highly Damaged;    **LD:** Least Damaged;  
**PD:** Partially Damaged;    **HHL:** High Human Loss.

\*In Sothikuppam the human toll is mostly children who ran towards the backwaters and fell into it.

One village that was totally wiped out, two villages with high damages and high human toll, two villages with high damages, three villages with partial damage and three villages with least damage were selected for the study. *Killaimedu* was selected as it was totally washed out. *Devanampattinam* and *Pudukuppam* were selected for the study because these villages encountered very high damage and high human toll. *Chinnoor* and *C. Pudupet* were selected because of the high damages in these villages. Under the category of partially damaged villages *Akkaraigori*, *Singarathoppu* and *Thazhanguda* were

selected. *Chittiraipeitai*, *Periakuppam* and *Sothikuppam* represent the villages with low damages. *Sothikuppam* was purposively selected as most of the dead were children.

In order to capture the cross sectional view of impacts and needs, following categories of the respondents have been considered for the study.

**Table No. 4**  
**Respondents' Category in the Study**

SL.No.	Social Categories
1	Men
2	Women
3	Children
4	Elderly
5	Disabled
6	Women with loss of bread winners and children

As the impacts and needs are likely to be different among the above mentioned categories and also to incorporate the felt needs of the vulnerable groups such as women, children and the aged into the community re-engineering process, samples representing each one of these categories have been selected using appropriate sampling method. Following table provides the overview of sampling framework.

**Table No. 5**  
**Sampling Framework**

SL.No	Sampling method	Category respondents of selected	Age group (in years)	Average No. of respondents in each village
1	Simple Random Sampling	Men Women Children	18 - 65 16 - 65	20 - 25 20 - 25 20 - 25
2.	Judgement Sampling	Elderly Disabled Women with loss of bread winners and children	> 66 25 - 40 20 - 60	5 - 10 2 5 - 10
3.	Census method	Panchayat Leaders	> 60	11

Random sampling method was used in selecting the respondents from the categories of men, women and children. While selecting women, care was taken to include pregnant women, lactating mothers, widows, women heads of the family and women who lost their husband and children due to Tsunami. Elderly, disabled and women with loss of breadwinners and children were selected by employing judgment-sampling method. Panchayat leaders were selected by using census method.

## 2.2 Survey instruments

Taking into consideration of the time and resource constraint, following tools have been primarily used for data generation at different levels.

Total No. 6  
Instruments Used for Data Collection

SL.No	Instruments used	Levels at which data collected	Respondents category
1	Schedules	Village	Key Informants from the community
2	Interviews	Individual level	Elderly Disabled Women with loss of bread winners & children Panchayat leaders
3	Focus group discussion	Cross section of Social Categories	Men Women
4	Interactive sessions	Group	Children

1. Schedules were used to generate data at village level and were designed to collect data on demography, households affected, damages caused and human loss due to Tsunami.
2. Interview method was employed to collect data from women who lost their husbands and children, elderly people and the disabled to understand their vulnerability and specific needs. In addition to these, village panchayat leaders were also interviewed to secure information on the felt needs of the village community and the problems involved in the relief measures. Semi-structured interview schedules were designed for each of these groups and were administered on them.
3. Focus group discussions were conducted separately for men and women to elicit information on differential impacts and specific needs. Topic guides were used and lead questions were asked in focus group discussions.
4. Interactive sessions were organized with the group of children by team of three investigators to comprehend their experiences, impacts and specific needs. These interactive sessions were systematically conducted using topic guides.

## 2.3 Survey team and data collection

The survey team consisting of four groups of investigators were directly involved in the data generation process. All the investigators were involved in the preparation of the tool kit. A workshop was organized to train the investigators. They were trained in conducting focus group discussions, interactive sessions and interviews. The survey team was able to successfully penetrate into the village community with the help of field staff and community organizers from ADEPT who have already built up good rapport with the villagers through their psychosocial interventions.

**Table No. 7**  
**Survey Team**

<b>Sl.No.</b>	<b>Investigating groups</b>	<b>Members Involved</b>	<b>Instruments Administered</b>
1.	Group I	Male Investigators – 3 Male Community organizers - 2	Focus group discussion for men
2.	Group II	Woman Investigator - 1 Women Community organizers – 2	Focus group discussion for women & interview
3.	Group III	Male Investigators – 3	Interview Schedule
4.	Group IV	Investigators – 2	Interactive Session

The survey team has been divided into four investigation groups and each group was entrusted with the responsibility of generating data from the specific category of respondents. The first investigating group consisting of three male investigators was made responsible for conducting focus group discussions with male population of the villages. The second group consisting of a woman investigator and two women community organizers was responsible for data generation exclusively from women respondents. This group organized focus group discussions with women population and conducted interviews with women who have lost their breadwinners and children. While conducting focus group discussion, investigators were individually responsible for moderating, observing and recording the information. Field staff from ADEPT played the key role in organizing the focus groups and facilitating the focus group discussions. Their intimate relationship with the community through their psychosocial interventions was immensely helpful in organizing focus group discussions. Each focus group consisted of 20 – 25 respondents and enough care was taken to record the representative views of all the respondents in the group.

The third group consisted of three male investigators for conducting interviews with the elderly, disabled and panchayat leaders. The interviews were conducted with the respondents either at their households or in the community setting as per the convenience of the respondents. The same group was responsible for generating village level data. In each village key informants were identified and village level data was procured from them using schedules. Secondary sources were also tapped to supplement as well as to check the authenticity of village level data generated from the key informants. Wherever necessary observations were made to assess the damages to households and physical structures.

The fourth group consisting of two investigators organized interactive sessions with children. These sessions were organized in community centres or playgrounds or school premises. Primary goal of these sessions were to assess the psychological impacts on children.

## Section – 3.0 Impacts and Needs

### 3.1 Damages, displacement and habitat development

Of the 51 villages directly affected by the Tsunami in Cuddalore district, two villages were totally wiped out and forty-nine were partially affected. In total 99,704 people were affected, 617 have died, 198 people sustained injuries and 15,200 households have been displaced. Damages and displacement of the coastal population in the villages selected for the survey are presented in the following table.

Table No.8  
Damages and displacement in the selected villages of  
Cuddalore district

SL.No.	Name of the Village	No. of houses/huts damaged		Population Displaced
		Fully	Partly	
1	AkkaraiGori	49	16	5489
2	C.Pudupet	136	319	1565
3	Chinnoor	120	382	1015
4	Chittiraipettai	37	-	910
5	Devanampatnam	502	259	7276
6	Killaimedu	64	62	2119
7	Periakuppam	7	-	2607
8	Pudukuppam	86	273	1094
9	Singarathoppu	235	16	2989
10	Sothikuppam	-	-	1656
11	Thazanguda	128	2	1897
	<b>Total</b>	<b>1,364</b>	<b>1,329</b>	<b>28,617</b>

Source: www.cuddalore.tn.nic.in

There is a close linkage between housing and livelihoods in the fishing community. Generally habitat of the fishing community is located closer to seashore and in most cases within 100 meters of the sea. Almost about 2693 houses were either destroyed or damaged in the selected villages of the Cuddalore district. Among the sample villages selected for the study *Devanampattinam* was the worst hit with 502 houses fully damaged and 259 houses partially damaged. About 7,276 people were displaced by the Tsunami in *Devanampattinam*. Other villages with heavy damages include *Singarathoppu*, *C.Pudupet*, *Thazhanguda* and *Chinnoor*.

The proportion of fully damaged houses is greater than the partially damaged houses in *Devanampattinam*, *Thazhanguda* and *Singarathoppu*. In *Chinnoor* and *C.Pudupet* the percentage of partially damaged houses is much higher than the fully damaged houses. Highest numbers of people are displaced in *Devanampattinam* followed by *Akkaraigori*, *Singarathoppu*, *Periakuppam* and *Killaimedu*.

## 3.2. Needs

### 3.2.1. Transit shelters

A large number of families rendered homeless by the Tsunami and majority of them are living in the temporary shelters. The temporary shelters are overcrowded and also do not have adequate infrastructure and sanitation facilities. There is no safety, security and privacy for people living in these shelters. As some of the temporary shelters are made of asbestos sheets and no flooring was made, people were exposed to excessive heat. Currently rains have made living in temporary thatched shelters very difficult. Most of them reported the frequent ailments of stomach pain, fever, diarrhoea, rashes etc.

There is so much of social disruption in the community living and loss of neighborhood. There is high degree of social discontent among the people living in the temporary shelters. There is an urgent need to design a specific and tangible plan to improve the temporary housing. Vulnerable sections of the displaced population such as widows, young girls, children, elderly need appropriate safety nets. Temporary shelters need to be made more livable and further loss of life due to poor public health condition be prevented.

### 3.2.2. Habitat development

A host of key issues relating to habitat development for the displaced families remain unresolved even six months after the disaster. The survey throws light on four different situations that need to be carefully analyzed before any initiative towards habitat development and community reconstruction are undertaken.

- (i) Relocation and resettlement of the entire village
- (ii) Partial resettlement of the communities whose
- (iii) houses have been washed away or totally collapsed
- (iv) Reconstruction of the existing houses or retrofitting of houses therein
- (v) Involuntary resettlement of unaffected communities in
- (vi) view of avoiding the risk of future disaster or the implementation of coastal regulation zone (CRZ).

**Relocation and resettlement of the entire village** as well as the **partial resettlement of the communities whose houses have been totally damaged** have considerable socio economic impacts. Generally, resettlement of the community would result in loss of neighbourhood relations, disruption of community cohesion and disintegration of social infrastructure such as self help groups (SHG), anganwadis, mahila mandals, youth organizations etc. The community infrastructure including internal roads, basic amenities, and service structure will also be dislocated. The relocation and resettlement will also have adverse impacts on their livelihoods and will cause impoverishment by affecting their access to livelihood resources, assets and equipments for fishing. Hence the habitat development requires careful planning and designing on the basis of participatory model. Community participation in the resettlement process is a fundamental requirement not only for the successful implementation of the project but also for resolving social and ethnic conflicts. The resettlement plans should aim at minimizing future vulnerabilities

and secondary displacement. It should promote equity, community ownership and accountability. There is a great need for the integrated habitat plan that would adopt multi hazard resistant technology with scope for future expansion. The habitat design has to be culturally sensitive and should give due consideration to their traditional livelihoods. They must be ensured to retain the rights to land on the seashore to accommodate the boats, nets, fishing equipments and fish processing. Basic amenities including internal roads, electricity, water and sanitation facilities need to be integrated in the habitat design. The construction of multi hazard resistant and multi purpose shelters are very important to protect themselves against future natural disasters. Regarding the third type of situation, where **reconstruction and retro fitting of houses are involved**, option should be given to people to reconstruct their houses either by themselves or by the supporting agencies. As far as the last category is concerned where **involuntary resettlement of unaffected communities** is warranted to prevent the risks of future disaster and implementation of CRZ, complex issues are involved besides the problems mentioned above. Relocation is advised in this regard only when their continued stay in the same place is found to be unsafe. Long term issues associated with the coastal zone protection should be taken into consideration.

### **3.3. Damages to the community infrastructure**

The damages to community infrastructure are minimal when compared to the houses in the Cuddalore district. At *Devanampattinam*, a secondary bridge used by the fishing community to transport the fish to the market is collapsed. A school building is damaged and the area was flooded with water. Interior roads have been damaged in *Singarathoppu* and *Akkaraigori*. The silt carried by the Tsunami waters has clogged the backwaters in many places. These backwaters were used for navigation as well as inland fishing. The high silt levels have made it difficult for navigation. The silt levels also affected the fish resources.

#### **3.3.1. Needs**

The bridge at *Devanampattinam* has to be reconstructed to allow the movement of commodities. The road network in the village needs to be replaced. De-silting of backwaters needs to be taken as priority task to enable the fishermen to navigate and fish. Many villages expressed the need to build the cyclone shelters to protect themselves against natural calamities. Such shelters need to be built on priority basis especially in villages like *Sothikuppam*, which are at danger being cut off from the mainland during natural calamities. The affected school building needs to be reconstructed.

### **3.3. Human toll and differential impacts**

According to government report 10, 881 people in India lost their lives, 5792 people were reported missing and 6913 were injured. In Tamil Nadu 7983 deaths were reported and 612 were reported dead in Cuddalore district. Within a few minutes hundreds of lives were lost and the disaster has devastated the coastal communities. Family networks and livelihoods were destructed resulting in widowhood, single parent families, orphans etc.

The sample villages were covered both from Cuddalore and Chidambaram taluk. In Cuddalore the villages covered were *Chittiraipettai*, *Devanampatnam*, *Periakuppam*, *Sothikuppam* and *Thazanguda*, while sample villages from *Chidambaram* were *AkkaraiGori*, *C.Pudupet*, *Chinnoor*, *Killaimedu*, *Singarathoppu* and *Pudukuppam*. As shown in Table 9 below, the death toll (including adult and children) among the sample villages is very high in *Devanampatnam* accounting to 27% (101) deaths compared to the overall death toll of 369 lives in the sample villages. Followed by *Pudukuppam* village accounts to 26 percent (96) of the total death toll. The death toll ranges between 3- 43 lives in other sample villages, which accounts to 47 percent (172) of deaths.

**Table No. 9**  
**Human Toll in the Villages Selected for the Survey**

Name of the Village	No. of Persons Dead				
	Male	Female	Children		Total
			Boys	Girls	
AkkaraiGori	4	9	1	-	14
C.Pudupet	8	26	5	4	43
Chinnoor	10	17	1	2	30
Chittiraipettai	-	-	-	3	3
Devanampatnam	21	42	23	14	101
Killaimedu	-	2	1	2	5
Periakuppam	-	-	-	-	-
Pudukuppam	15	43	19	19	96
Singarathoppu	1	15	-	4	20
Sothikuppam	1	3	12	6	22
Thazanguda	6	14	5	10	35
<b>Total</b>	<b>66</b>	<b>171</b>	<b>67</b>	<b>64</b>	<b>369</b>

Source: www.cuddalore.tn.nic.in

The total death toll among children contributes to 35 percent of the overall deaths among the sample villages. Of the 37 percent 67 were boys and the remaining 64 children were girls. Unlike *Devanampatinam* and *Pudukuppam* where the overall death toll is high (both among children and adults) in villages like *Sothikuppam*, *Thazanguda* and *Chinnoor* the death toll among children is comparatively higher than the death among adults in these villages.

Table 10 below depicts the number of persons missing in the sample villages who comprised of men, women and children. As per official statistics totally 16 were missing among which 6 were male and 4 were female. While among children 4 of them were boys and 2 were girls.

**Table No. 10**  
**No. of Persons Missing in the Villages Selected for the Survey**

Name of the Village	No. of Persons Missing				Total
	Male	Female	Children		
			Boys	Girls	
AkkaraiGori	1	-	-	-	1
C.Pudupet	2	1	1	-	4
Chinnoor	2	-	-	-	2
Chittiraipettai	-	-	-	-	-
Devanampatnam	1	1	2	1	5
Killaimedu	-	-	-	-	-
Periakuppam	-	-	-	-	-
Pudukuppam	-	1	1	-	2
Singarathoppu	-	1	-	-	1
Sothikuppam	-	-	-	1	1
Thazanguda	-	-	-	-	-
<b>Total</b>	<b>6</b>	<b>4</b>	<b>4</b>	<b>2</b>	<b>16</b>

Source: www.cuddalore.tn.nic.in

Similarly Table 11 below shows the number of orphaned children in two villages namely *Pudukuppam* and *Thazanguda*. There are seven orphaned children out of which 6 were girls.

**Table No. 11**  
**No. of Children Orphaned in the Villages Selected for the Survey**

Name of the Village	No. of Children Orphaned		
	Boys	Girls	Total
AkkaraiGori	-	-	-
C.Pudupet	-	-	-
Chinnoor	-	-	-
Chittiraipettai	-	-	-
Devanampatnam	-	-	-
Killaimedu	-	-	-
Periakuppam	-	-	-
Pudukuppam	1	3	4
Singarathoppu	-	-	-
Sothikuppam	-	-	-
Thazanguda	-	3	3
<b>Total</b>	<b>1</b>	<b>6</b>	<b>7</b>

Source: www.cuddalore.tn.nic.in

### 3.4. Differential impacts

According to the official statistics, the proportion of human toll among women was three times more than men in Cuddalore district. Though the killer wave does not discriminate between men and women, rich or poor, gendered impact is clearly felt in death. The traditional dress of Indian women that constrained them from running and their hair that caught in thorny bushes and debris battered them to death. The high toll of women than men can be accounted not only due to their physical vulnerability but also due to their familial and economic roles. The sea engulfed them when their motherhood pushed them to protect their children and while they strived to safeguard their household assets. ***Challenging the patriarchal notion that women are passive housewives, Tsunami has created evidences for their economic participation. Women on the seashore, auction place and market places in pursuance of their occupation*** were drowned in the tidal waves. Thus Tsunami seems to have created far-reaching implications of gender imbalance.

Even among survivors women are made more vulnerable to the disaster. The Tsunami has left women as destitute widows who have to shoulder the responsibility of rebuilding the households and family economy. Even the women who have lost their children are under the threat of losing their conjugal rights for want of male progeny. The loss of children especially the loss of male children has caused a peculiar problem to women in the affected villages. In the case of women who have undergone tubectomy and lost their children are not in a position to beget children. Their husbands are insisting on remarriage citing the need for male children. In many cases they insist on their wives' sisters to remarry them. This results in loss of conjugal rights of women on the one hand and forced marriages of young girls with married men on the other. It is often reported that widows have not been able to have access to the benefits since all the papers are in the names of their husbands. They do not have the right to compensation for boats and nets that have been lost or damaged.

Tamil Nadu government pays the Exgratia payment of Rs. 1,00,000 for the dead Rs.25,000 per person who lost limbs and eyes and Rs.5,000 for those who sustained serious injuries. Central government also pays the Exgratia amount of Rs. 1,00,000 for the dead. The Exgratia payments and compensation for the loss of family members are paid to the male members of the family, which often is spent on personal luxury and enjoyment by men.

In the women headed houses, young girls drop out from schools and look for wage earning opportunities. Women who were involved in small trade have lost their livelihoods and suffer loss of income. Women of this community have savings in the form of gold jewelry, which was also lost in Tsunami. Widows and elderly women who have survived are in a desperate position need extra support.

Women and adolescent girls have been psychologically traumatized by the Tsunami encounter. Tsunami has left deep scars in them resulting in psychological problems such as insomnia, stress, nightmares, suicidal tendencies etc. Most of the women have reported to be having physical ailments like fever, chest pain, weight loss, fatigue etc.

### 3.4.1. Needs

Thus the evidences available show that the differential impact of tsunami on men and women has serious and long-term implications for the rehabilitation and reconstruction process. Gender justice can be rendered only when gender specific needs are prioritized and addressed through women development strategies. Otherwise, women will be labeled as vulnerable and will be marginalized. It is of absolute necessity to implement empowerment projects for the affected women cross cutting all sectors of rehabilitation and reconstruction activities. Women's rights and entitlements to relief measures, Exgratia payments, compensation, land rights, joint title deeds for housing and livelihood rehabilitation should be ensured. Conjugal rights need to be protected. Recanalisation for the women who want to beget children be provided by the health centres so that they can gain emotional security and safeguard their conjugal rights. This measure would discourage men in abandoning their wives for want of male child.

Orphaned children, elderly and disabled need special attention. Children's entitlements need to be safeguarded. As per the relief and rehabilitation measures of Tamil Nadu Rs.5, 00,000 will be deposited for each orphaned child and adolescent girls, which can be attained at the age of 18 years for further studies and employment. Also the orphaned unmarried girls over 18 years are entitled for the fixed deposit of Rs.3, 00,000. As lot of risk is involved in this regard, more specific guidelines are to be drawn and safety measures to be provided. Elderly population with loss of breadwinners in the family need appropriate social security nets. Though there are only two instances of disability caused by tsunami, compensation entitled to them has not been paid.

### 3.5. Loss of livelihood

Fishing is the most obvious activity along the coast and is the major livelihood of the Tsunami affected coastal communities in Cuddalore district. About 90% of the population in these coastal villages is engaged in fishing and fisheries related activities and the remaining 10 percent are engaged in agriculture, livestock and micro enterprise. The tsunami has caused direct impact on the lives of the coastal communities. The direct impact relates to loss of employment due to the destruction and damages of livelihood assets, equipment and infrastructure. The indirect impact has occurred in the economic zone of tsunami and resulted in the employment loss due to the break down in the sources of supply of raw materials and semi finished goods, services and markets.

Table 12

Number of fishing crafts damaged

Sl.No	Fishing crafts damaged	Total Damages	Partial Damage	Worth (in Rupees)
1	Wooden mechanized boats	50	161	13,05,00,000
2	Mechanized FRP boats	114	137	4,56,25,000
3	Catamaran Wooden boats	2731	284	28,73,00,000
4	Catamaran FRP boats	593	601	13,40,25,000
	Total	3488	1183	59,74,50,000

Source: ADF (M), DOF Cuddalore 04.01.2005

According to the estimations made maximum damage was caused to catamaran, wooden and FRP boats. About 2,731 Catamaran wooden boats and 593 Catamarans FRP boats

have been totally damaged. Partial damages have happened to 601 and 284 catamaran FRP boats and Catamaran wooden boats respectively. Nearly 161 wooden mechanized boats have also undergone partial damages. Totally 1183 crafts have undergone partial damages. The total worth of these crafts accounts to Rs. 59,74,50,000.

The widespread damage caused by tsunami has brought total disruption in the economic activities in the fisheries sector significantly affecting the livelihood of the fishing community in these villages. The loss and damages to boats, nets and fishing craft have made fishing impossible. Households involved in the different stages of fishing, fish processing and fish marketing were affected. The workers in fishing industry were the worst hit as they belong to the under privileged sections and below poverty line categories. This has accentuated to the rising poverty and more severely in the single parent households. Agriculture land in *Devamapattinam* was inundated by seawater resulting in loss of floriculture as the land becomes saline.

### **3.5.1. Needs**

Damaged boats need to be adequately compensated and lost ones need to be replaced. As many of the non-motorised boats are not insured, many become ineligible for compensation for the loss of boats. Similarly in the case of the damaged motorized boats, compensation paid is not adequate enough to meet the expenditure involved in repairing the boats. There is need for the restoration of damaged fisheries infrastructure and revitalization of the livelihoods of the affected families. In general men are not open to the option of alternative livelihoods. Even among the women only younger generation is willing to undertake alternative livelihoods. Youth among men expressed their willingness to participate in the capacity building programs in the fisheries sector.

Many women of the fishing community are involved in the fish processing and fish marketing. Those who have lost their livelihoods need to be rehabilitated. Damages to agriculture though not significant, reclamation of saline land in *Devanampattinam* deserves special mention. Thus livelihood rehabilitation programs need to be designed separately for those who wish to remain in fishing and those who do not wish to remain in fishing should be planned.

## **Section 4.0.**

### **Rehabilitation and Reconstruction Framework for Community Re-Engineering**

#### **4.1. Introduction**

There had been tremendous havoc and devastation caused by Tsunami along the coastline of Tamil Nadu. The State had been providing immediate relief and trauma management towards helping families and individuals to get back to their normal lives. Now it is imperative that the State has to plan towards the long-term rehabilitation and reconstruction framework.

It is the right time to evolve essential guidelines to further develop them into plans. Clearly defining the roles of the actors – state, civil society and local community towards permanent reconstruction and rehabilitation would enhance the future management of such disaster.

Towards this goal this report attempts to provide guidelines for various activities of the rehabilitation framework to strengthen the planning mechanisms and tasks involved in planning process. These views or guidelines are suggested based on the needs identified not only within Cuddalore district but also makes an effort to incorporate some of the relevant experiences from the other Tsunami hit countries.

#### **4.2. Resettlement and habitation development**

##### **4.2.1. Site location**

(i) Care should be taken to see that the long term issues associated with Coastal Regulation Zone (CRZ) are resolved in the case of relocation of the entire village/ settlement and reconstruction of the partially damaged houses.

(ii) Appropriate location of site at safe distance and safe elevation need to be made. Location of land should facilitate Social networks, Economic networks and Livelihood needs.

(iii) Size of the plot should be appropriate to the traditional and livelihood needs.

(iv) Affected communities have to be involved in site location and site planning.

(v) Relocation should not increase vulnerability and defeat the purpose of relocation.

##### **4.2.2. Settlement layout**

(i) Community should be given a choice to adopt owner driven approach with the support of the organizations or leave it to the support organizations to construct.

(ii) Village level communities should be sensitized on the issues related to planning and designing settlements/ houses. Community participation should be made as a fundamental requirement in the planning process to ensure their acceptance, maintenance and accountability.

(iii) Habitat plan should be developed using participatory approach involving the community, civil society organizations and local government

(iv) Local communities need to be actively involved in planning, decision-making and implementation of the resettlement programs. People of various socio economic categories should have equal participation and domination of one group is to be avoided. Grievance redress system should be established.

(v) Consent of letters by Gram Panchayat or Gram Sabhas should be sought for the basic plan of shelter, habitation and realignment of land.

(vi) Street layout should be designed to ensure ventilation, protection from cyclones, access to fire engines/ ambulances and to accommodate social interaction and livelihood activities

(vii) Communal open space for boatyards, storage of nets, ropes and spare parts should be provided and usufructory rights of the land on shore for economic activities by the fishing communities be protected.

(viii) Open and partially shaded space for drying of nets, repairs of boats/ nets and repainting be provided.

(ix) Capacity building of local community to take up construction related income generation activities be considered seriously. Women should also be given equal opportunities in capacity building.

#### **4.2.3. Community infrastructure**

(i) Community infrastructure including multi -purpose cyclone shelters, schools, health centers, shop spaces, community halls, community information centers, market platforms and auction sheds should be incorporated in the habitat plan.

(ii) Habitat design should have continuity to the vernacular layout of affected shelters.

(iii) The core shelter should be built of materials that are suitable to withstand climatic stress of the coast.

(iv) Sanitation facilities including soak pits, septic plants, garbage collection points, composting areas and fish drying areas should be included.

(v) Rainwater harvesting facility should be incorporated in community planning.

#### **4.2.4. Transit shelters**

(i) Temporary shelters cause lot of inconvenience for livelihood activities, health problems, insecurity and sanitation problems. These problems need to be addressed immediately.

#### **4.2.5. Livelihood rehabilitations**

(i) Damaged livelihood infrastructure should be restored. Damaged catamarans, boats and nets should be replaced or compensation for the damages should be provided.

(ii) Necessary measures should be taken to improve and modernize the facilities and productive infrastructure such as storage facilities, fish drying, fish curing etc.

(iii) Livelihood rehabilitation programmes need to take into consideration of the people's preference to stay within fisheries and those who do not wish to stay within the fisheries sector. Affected people should be provided with information on re-training options and alternative employment opportunities

(iv) For those who wish to remain in fishery sector, re-training programmes in modern fishing methods, junior mechanic course, hygienic handling of marine products,

preparation of value- added fishery by-products, ornamental fish culture, fish net repairs and maintenance, fish processing technology, fish culture training, coastal aqua culture etc should be organized with value addition. Demand driven and related marketable skills of fishermen should be upgraded through a range of specialized agencies.

(v) Training programmes should be organized for alternative livelihoods. Importance should be given to human capacity building and labour absorptive techniques in rehabilitation program.

(vi) Necessary training can be imparted in the formation and management of Co – operative Society

(vii) Training and support for the development of small-scale business and entrepreneurship should be provided.

(viii) Government programmes of National Savings cum Relief Scheme for fishermen, Group Accident Insurance Scheme for fisherman, Life insurance, boat insurance etc should be outreached to the fishing community.

(ix) Age earning opportunities should be provided through on-going employment generation schemes of the government.

(x) Reclamation of salinised land should be undertaken.

#### **4.2.6. Women specific needs**

(i) Title to permanent houses constructed for Tsunami victims must be in the joint names of woman and man of the household. Male and female heirs of beneficiary should have equal rights of inheritance.

(ii) To ensure relief amounts fully benefiting children and families, the amount should be paid to women folk.

(iii) Principles of Gender Equity and social inclusion should be incorporated in sustainable livelihood security strategy.

(iv) Self Help Groups should be formed or existing SHG should be strengthened. Capacity Building programmes should be organized for SHGs. Alternative livelihood options should be provided through SHGs.

(v) Loans given to SHGs of fisherwomen must be rescheduled/ written off as per their repaying capacity.

(vi) Older women who were running small enterprises like petty shops and food stalls along the coast should be given financial support to continue with their occupation.

(vii) Ongoing pension schemes such as old age pension, physically handicapped pension, destitute widow pension and destitute agricultural labourer pension should be extended to cover all those rendered destitutes.

(viii) Priority should be given to the marginalized groups of women such as widows, women headed households, disabled, aged, minority and dalit women in all the rehabilitation programmes.

(ix) For those who wish to remain in the fisheries sector re-training programmes with value addition should be given. Demand driven and related marketable skills should be provided to women.

(x) For those who have options outside fisheries, training programmes in alternative livelihoods should be given.

(xi) The non-fishing and those who are engaged in occupation ancillary to fishing, must have the same entitlements as fishing folk.

(xii) Training programmes can be organized for women in raising mangrove forest, community nurseries of mangroves, raising artificial coral reefs etc.

(xiii) Women should be involved in designing and implementation of all the resettlement and rehabilitation programmes.

(xiv) Massive Food for Work programmes should be undertaken in all the affected areas and women must be given fifty percent of the employment generated through the programmes.

(xv) Women rendered destitute by the disaster should be rehabilitated in their own community to the extent possible by providing adequate livelihood security and independent household.

(xvi) Through health care centres, recanalisation to be provided for those who have already undergone tubectomy.

#### **4.2.7. Needs of children**

(i) Orphaned children if any can be admitted into the orphanages. Progress and development of the children need to be monitored. Orphan Adolescent girls (over 18 years) can be admitted into service homes.

(ii) The policy for adoption of orphaned children in the calamity must be evolved with great care and concern in consultation with the community

(iii) NGOs should take up the responsibility of monitoring the progress of the children and adolescent girls in orphanages and service homes.

(iv) Safety measures and specific guidelines should be developed with regard to the disbursement of money invested in fixed deposits by Tamil Nadu government in the name of the orphaned girl children/ adolescent girls/ girls over 18 years.

(v) Relevant and demand driven vocational training should be given to the girls over 18 years staying in service home.

(vi) All the on-going social welfare schemes should be extended to young girls and orphaned children.

(vii) Children should be provided with study materials for all classes. Special coaching should be given to tenth and twelfth class children of Tsunami affected areas.

(viii) State should ensure security and education for all children and prevent them from falling prey to child labour and child trafficking.

(ix) School buildings and anganwadis should be rebuilt and made child friendly

(x) Children should be given training in disaster preparedness.

(xi) Counseling sessions be organized for children to overcome the fear of Tsunami.

(xii) Scholl teachers should be given training in counseling.

#### **4.2.8. Needs of the aged and physically disabled**

(i) All the on-going social welfare schemes should be outreached to the aged and physically disabled

(ii) Aged people left with no support can be accommodated in Old Aged Homes with their consent

(iii) Alternative livelihood options need to be organized for physically disabled.

(iv) Necessary health care services can be organized for the aged periodically.

(v) Necessary steps should be taken to provide compensation for the injured.