COMPREHENSIVE TSUNAMI DISASTER PREVENTION (CTDP) TRAINING COURSE

2nd June-11th July, 2008

Country's Action Plan on Tsunami Countermeasures - India

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1. Review of tsunami countermeasures

1.1 Major improvement on tsunami countermeasures after 2004 Indian Ocean tsunami

On 26 December 2004, a massive undersea earthquake measuring 8.6 on the Magnitude Width (MW) occurred off the island of Sumatra, Indonesia. It triggered off tidal waves that destroyed large expanses of coastal terrain in Tamil Nadu, Kerala, Andhra Pradesh, Pondicherry and Andaman & Nicobar (ANI) Islands. The Tsunami flattened a number of dwellings, breached shore protection walls, impaired ports and jetties and contaminated many ground water sources. The ingress of sea into low lying cultivated fields resulted in a loss of crops and increased salinity on large tracts of agricultural and plantation lands thereby seriously impairing their cultivability.

The tsunami left 10,273 people dead and 5,823 people missing. It also damaged 150,076 houses and 83,788 boats and affected 36,488 livestock and 26,000 hectares (ha) of agricultural land. Details are at **Annexure 1**.

Rescue and Relief Measures

The Government of India launched immediate rescue operations by deploying defence and paramilitary forces and coordinating the movement of goods and services across State territories for reaching the relief assistance. The Central and the State Governments/Union Territory Administrations also conducted a comprehensive range of relief operations. In addition to the rescue of 635,766 people, relief personnel searched for the missing removed dead bodies and debris, set up relief camps, provided medical assistance, emergency feeding, and restored essential services. Non Governmental Organizations (NGOs) provided valuable assistance. The immediate, coordinated and comprehensive response prevented the outbreak of any epidemics.

Damage Assessments and Urgent Relief Provision

The Inter-Ministerial Central Teams (IMCT) set up by GOI conducted damage assessments of Tsunami in coordination with the State/ Union Territories (UT). The assessments of the IMCT and recommendations of the Inter-Ministerial Group (IMG) were considered by the High Level Committee (HLC) set up for calamity relief. “Rajiv Gandhi Rehabilitation Package” was approved with Rs. 3644.05 crores comprising Rs. 1439.39 crore for relief and Rs. 775.51 crore for reconstruction and rehabilitation.

A Joint Assessment Mission of the World Bank, ADB & UN estimated the Tsunami reconstruction requirement at Rs. 5300 crores (excluding ANI) and reported sector wise components needed for relief and reconstruction, The amount provided for by external agencies is only Rs. 3344.13 crores whereas the present proposal before Cabinet is for reconstruction and rehabilitation is Rs. 9870.25

crores. The difference arises from the fact that there is considerable under provisioning in many sectors by the external agencies; they do not cover ANI (Rs. 2676.91 crores) and in some sectors like tourism and for resurgence projects no provision has been made.

The Tsunami Reconstruction and Rehabilitation Programme

The Core Group/Planning Commission for Tsunami Rehabilitation Program comprises representatives from Central Ministries/ Departments, State Governments, Research Institutions and the Planning Commission. Based on a consultative process , the Core Group has proposed Rs. 9870.10 crores for Reconstruction and Rehabilitation.

In order to assist/guide the States/UTs a detailed set of guidelines have been developed for formulation of investment proposals to be financed under the program. The main elements of these guidelines include:

a. Guiding Principles
b. Program Structure
c. Institutional and Fund Flow Mechanism
d. Program Monitoring
e. Norms
f. Community Participation & Involvement of NGOs

The States/UTs are advised to make use of the guidelines while preparing investment proposals.

Disaster Management Act.

Disaster Management Bill was passed by the Parliament and National Disaster Management Authority (NDMA) has been set up at the Centre and the State Disaster Management Authority (SDMA) at the State level. It will help in strengthening the institutional arrangements for effective disaster management besides accountability and responsibility for assigned task to different authorities at the National, State and District level.

Tsunami Early Warning System

In the aftermath of the Great Sumatra earthquake of 26th December, 2004, Government of India has sanctioned Tsunami Early Warning Project to set up at the cost of 32 million $ in 2005. The Early Warning System for Tsunamis was finally commissioned in 2007 in the Indian Ocean region at Indian National Centre for Ocean Information Services (INCOIS), Hyderabad, which is operating on a 24X7 basis. The system provides advance warnings of Tsunamis likely to affect the coastal areas of the country.

Workshops on Tsunami Countermeasures

The Planning Commission in association with International Ocean Institute (India) and Department of Ocean Engineering IIT-Madras had organized three national and International workshops which were attended by the senior officials of the states which had decisions making power .The purpose of these workshops were to study the location wise specific projects for Tsunami counter measures.

- Development of Tsunami/storm surge code for coastal structures and protection measures based on the tsunami force evaluation.
- Role of bio-shield as a soft measure for protection against the tsunami waves.
- Evaluation of the hard and soft measures for the coastal protection and rehabilitation works.
- Shoreline dynamics and Design of coastal protection measures in the Tsunami affected areas.
- Preparation of risk map in real time for the vulnerable coasts
- Formulation of guidelines for coastal systems such as coastal structures and saline embankments and construction procedures.

Cooperation system in our country

The integrated approach of disaster management through the involvement of Self Help Group, mutual support and Public assistance in Japan has been unique in itself. All the stakeholders are well aware of their roles and responsibilities. The involvement of the stakeholders help in maintenance of the structures of tsunami measures and give them a feeling of ownership.

While most of the structures are very effective and can reduce the damage of the life and property to a large extent, awareness among the people about the disaster mitigation is very important and due to this at the time of disaster they can evacuate to safer places.

In India also, after the tsunami tragedy, apart from the support by the Governments at the Centre and States, several groups such as NGOs, Self Help Groups etc. reached the affected areas and provided all kind of relief assistance to the affected people which was needed immediately. This included food, clothing, blankets, tents, medicines etc.. People from all part of the country contributed wholeheartedly to the Prime Minister's Relief Fund which was used for relief work. This shows the unique example of involvement of people during the contingency as in the case of Japan.

1.2 a) Legal institutions, basic plan for disaster mitigation

The Disaster Management Act, 2005

(No. 53 of 2005)

Just after the tsunami, the Government of India enacted the Disaster Management Act (DMA), 2005 to provide for the effective management of disasters and matters connected therewith or incidental thereto. The Act extends to the whole of India.

The Act lays guidelines for 'disaster management' within the country which, inter alia, includes:

- Prevention of danger or threat of any disaster;
- Mitigation or reduction of risk;
- Capacity building;
- Preparedness to deal with any disaster;
- Prompt response to any threatening disaster;
- Assessing the severity or magnitude of effects of any disaster;
- Evacuation, rescue and relief; and
- Rehabilitation and reconstruction.

The DMA, 2005, with a view to integrate the disaster management measures and also for effective management of the same at all the levels of the Governance viz. the National, the State and the District, recommends constitution of the following authorities at each level:

(i) National Disaster Management Authority (NDMA) – at the national level;
(ii) State Disaster Management Authority (SDMA) – at the state level; and
(iii) District Disaster Management Authority (DDMA) – at the district level.

Each of these authorities has been assigned a specific role, power and function for effective 'disaster management' in their respective areas. Composition, power and functions of each of the above authorities are discussed in the following paras:

NDMA

Composition

Prime Minister – Chairperson

Members – 9 (One of the persons from the members shall be nominated as the 'Vice-chairperson' by the Chairperson)

Powers and functions

- Laying down of the policies, plans and guidelines for the disaster management;
- Approval of the national plan;
- Coordination of the enforcement and implementation of the policy and plan for disaster management;
- Recommendation for the provision of funds for the purpose of mitigation;

- Lay down guidelines to be followed by the different Ministries or Departments of the Government of India for the purpose of integrating the measures for prevention of disaster or mitigation of its effects in their development plans and projects; and
- Provide such support to other countries affected by major disasters as may be determined by the Central Government.

SDMA

Composition

Chief Minister – Chairperson

Members – 8 (One of the persons from the members shall be nominated as the 'Vice-chairperson' by the Chairperson)

Powers and functions

- Laying down of the state disaster management policy;
- Approval of the state plan;
- Coordination of the implementation of state plan;
- Recommendation for the provision of funds for the purpose of mitigation and preparedness measures; and
- Review the development plans of different departments of the State and ensure that prevention and mitigation measures are integrated therein.

DDMA

Composition

District Magistrate – Chairperson

Members – 7 (the elected representative of the local authority shall be the co-chairperson)

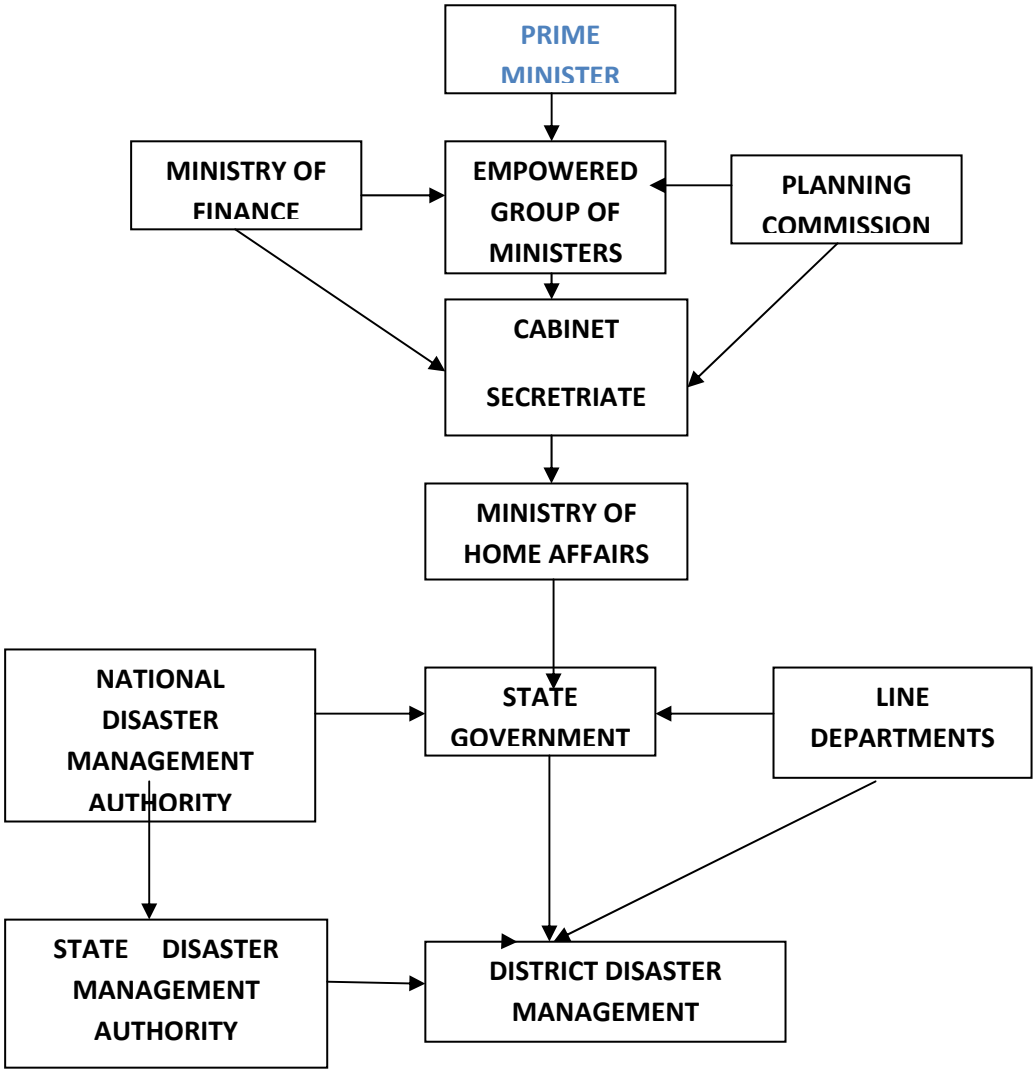
Powers and functions

- Preparation of a disaster management plan including district response for the district;
- Coordination and monitoring of the implementation of the National Policy, State Policy, National Plan, State Plan and District Plan;
- Identification of vulnerable areas for taking appropriate mitigation measures;
- Organize and coordinate specialized training programmes for different levels of officers, employees and voluntary rescue workers in the district;
- Facilitate community training and awareness programmes for prevention of disaster or mitigation;
- Set up, maintain, review and upgrade the mechanism for early warnings and dissemination of proper information to the public; and
- Coordinate response to any threatening disaster situation or disaster.

The DMA, 2005, apart from laying a clearly defined framework for 'disaster management' at different levels viz. the national, the state and the district, also envisages constitution of the following:

I. National Disaster Response Force (for the purpose of specialist response to a threatening disaster situation or disaster); and
II. National Disaster Response Fund (for meeting the expenses for emergency response, relief and rehabilitation during any threatening disaster situation or disaster).

b) Organizations, systems including emergency response



(Fig. 1)

At the national level, the Ministry of Home Affaires is the nodal ministry for all matters concerning disaster arrangements; the Central Relief Commission (CRC) in the ministry of Home Affairs is the nodal officer to co-ordinate relief operations for natural disaster. The CRC receives information relating to forecasting/warning of a natural calamity from India Metrological Department (IMD) or from Central Water Commission of Ministry of Water Resources on a continuing basis. The Ministries/Departments/Organizations concerned with the primary and secondary functions relating to the disaster management include: Indian Metrological Department, Central water Commission, Ministry of Home Affaire, Ministry of Defense, Ministry of Finance ,Planning Commission, Ministry Of Rural Development, Ministry of Urban Development, Department Of Communication, Ministry Of Health, Ministry of Water Resources, Ministry Of Petroleum, Department Of Agriculture & Cooperation, Ministry Of Power, Ministry of Information & Broadcasting, Ministry of Railways ,Cabinet Secretariat, Department Surface Transport, Ministry Of Social Justice, Department of Women& Child Development, Department of Earth Science, Department Science and Technology, Ministry Of Environment & Forest and Department of Food (Fig. 1).

National Crisis Management Committee (NCMC)-Cabinet Secretariat, Who is the highest executive office heads the NCMC. Secretaries of all the concerned ministries /Depts. As well as organizations are the members of the committee. The NCMC gives direction to the CMG in the MHA as deemed necessary.

Crisis Management Group (CMG) – CRC in the Ministry of home Affairs is the chairman of the CMG, consisting of nodal officers from various concerned ministries.

Calamity Relief Fund has been has been set up in the each state as per the recommendations of the Eleventh Plan. Government of India contributes 75% of the corpus of the CRF and 25% is to be contributed by the State. National Calamity Contingency Fund is created at the central government level.

c) Structural measures

Hard structural measures refer to seawalls, dikes, tsunami breakwaters, tsunami gates, evacuation shelters etc. Coastal structures often are protected / fronted by hard and soft measures beach vegetation. India has coastline of about 6500 kms along the mainland besides the coastline of Andaman and Nicobar and Lakshadweep islands. The hard type of coastal protection measures are Sea walls, Groins, Jetties, Offshore detached break waters, combination of two or more of the said structures and several other types of structures such as Geo-tubes, geo-bags also fall under this category.

Even before the occurrence of the Tsunami in the Indian coast, there were structural and non structural measures existing. The seawall in karaikal district of Pudducherry was prepared by the French people when they were ruling in that state but this sea wall got damaged due to Tsunami. Similar is the case in Tamil Nadu

Case Studies of Tamil Nadu Coast

The coastline of Tamil Nadu has a length of about 1000 kms stretching along the Bay of Bengal, Indian Ocean and Arabian Sea. The coastline is bounded on the north by Pulicat Lake and south by

Kanyakumari and stretches over 13 districts. Approaches towards the mitigation of major disasters, such as tsunami, are to promote dual-use technologies to improve the resiliency of the biophysical and socioeconomic system. The results of the post –tsunami survey clearly indicate that the coastal protection structures (engineering structure, vegetation etc.) helped in the mitigation of the adverse consequences of the tsunami. As a permanent solution for the coastal erosion problem, ten numbers of the shore connected straight rubble mound groins in the two severely affected stretches are under construction.

Another success with groin field is that for a stretch of 3kms covering Kurumbanai, Vaniyakudi and Simon colony villages in the west coast of Tamilnadu.The groin field has enhanced the beach formation in the originally eroding stretches, acted as buffers in reducing the inundation of sea water due to tsunami.

Karaikal Coast – A Case Study Karaikal is one of the four regions of the Union Territory of Pondicherry. It is about 300 km south of Chennai and about 135 km from Pondicherry along the East Coast of India. It is surrounded by the Nagapattinam and Thiruvarur Districts of TamilNadu State.

The stretch of Karaikal coastal zone is flat and hence, it is prone to inundation due to highest high tides and storms. On realizing this, a parallel coastal wall had been built in earlier days. Irrigation and Public Health sections of PWD, Govt. of Pondicherry had constructed coastal wall using sand as a core material as a core material covered with precast concrete blocks for the entire coast of Karaikal region. This work was done by French Govt. during their occupation of the territory. The top width and bottom width of the old coastal wall is 1.5m and 5.5m respectively with a side slope of 1:1 This coastal wall, basically a sand bund armored with concrete.

The 2004 Indian Ocean Tsunami invaded the coast of Karaikal which resulted in huge loss of human life and to the inundation over a large extent of land. And also, with the recent growth of sea trade and allied industrial activities necessitates the need for safer berthing facilities. The consequences of infrastructure development at the coast would result in disturbance to the littoral drift movement which makes the shoreline highly unstable.

The Department of Ocean Engineering, IIT Madras provided suggestions and recommendations for protecting the coast of Karaikal while improving the river mouths of Arsalar, Puravadaiyanar and Tirumalarajanar, for perennial water exchange for uninterrupted fishing boat movements by redesigning the new sea wall.

Proposed Coastal Protection Measures

i) Chennai Region-- 10 numbers of groins with average length of 150m.

ii) Pudukuppam -- During the tsunami onslaught, water penetrated for about 1 km landward, and damaged the houses that are located at a distance of 500m from the shoreline. Here the construction of two rows of masonry blocks at a distance of 200m from the shoreline and in between these blocks and shoreline, trees are planted.

iii) Kottilpadu Colachel- This one of the worst affected villages of the coast of Kanyakumari district due to tsunami and resulted in heavy causalities. As a part of the proposed

measures, a seawall with a crest level of 6m above the MSL with a bream of width 4m and a strong toe of width of about 3m is under construction. The seawall will be backed by plantation that would be backed by plantation and will further be backed by a crown wall with its top level at 7m above MSL.

Based on the location- wise specific measures studies, Deprtment of Ocean Engineering, IIT Madras has various such hard measures after tsunami of 2004 which are being under taken at various location in Kerala state and Andaman & Nicobar Islands .

Relocation of Houses at the Higher Places

In Japan most of the coastal areas are inhabitated and surrounded one side by sea and other side by mountain and there is very limited flat land. At the time of the tsunami people have to go to the higher places for evacuation and therefore the evacuation centers are located at the higher altitude which is not the case in India. In India, the one side of the coastal area is sea whereas the other side is flat. Therefore, to protect from the tsunami, the new houses / villages in the coastal area are generally constructed at the higher altitude.

d) Non-structural measures

Non-structural counter measures refer to all measures of tsunami disaster reduction except hard defense structures (e.g. seawalls, dikes, tsunami breakwaters, tsunami gates, evacuation shelters)

Coastal structures often are protected / fronted by beach vegetation. The concept of protecting the structures from disastrous events naturally considers beach vegetation as a protection measure as this is most natural friendly and guarantees stability of the shore line. The disastrous waves from the sea undergo significant damping when they encounter the beach vegetation (Tetsuya Hiraishi 2003). This reduction of force is mainly due to the effect of drag resistance that is being offered by the vegetation.

Coastal Bio Shields

Coastal area in Tamilnadu, Kerala, Andhra Pradesh, Orissa, West Bengal, Pudduchery and Andaman and Nicobar Islands are susceptible to periodic cyclones and occasional Tsunami, which cause damages to life and property as evidenced recently. Vegetation along the coast is sparse and confined to patches of mangroves and plantations of Casuarinas and Cashew. They are not adequate to mitigate adverse effects of recurrent cyclones and high velocity-winds. Coastal districts in TamilNadu like Kanchipuram, Tiruvellore, Cuddalore, Nagapattinam, Tiruvarur, Thanjavur, Pudukkottai, Ramanathapuram and Thoothukudi are most affected by the recurrent cyclones. The recent Tsunami has devastated the low lying Nagapattinam besides Kanniyakumari,Cuddalore and Chennai coast.

It is therefore necessary to undertake intensive rehabilitation programmes to raise tree cover all along the coastal areas through artificial regeneration. Similarly it is imperative to extend the existing stock of mangroves in these States and UTs to the potential areas along the estuaries and Marshlands. The existing stock of degraded mangroves needs to be enriched in density.

Mangrove plantation

Pichavaram mangroves

The mangrove protected village namely, T.S. Pettai is located at about 1800 m to the west of the sea. A part of the Pichavaram mangrove forests, about 1100 m in breadth (east to west) is located on the eastern side of the village. A small lagoon, about 800 m maximum in breadth (east to west) is present between the mangroves and the sea (distances are calculated from the high-resolution remote sensing imagery)

Shelterbelt Plantation

Nagapattinam New Beach shelterbelt

Along the Nagapattinam New Beach, a shelterbelt of casuarina is raised in about 43 ha. Planting was done during 2001-2002 with an spacement of 1.5 m between plants and 2.0 m between rows. The length of the plantation along the beach (north to south) is about 1 km and maximum breadth (east to west) is about 500 m (Southern side) and minimum breadth is about 200m (northern side). This plantation s raised by Wildlife Division of the Tamil Nadu Forest Department

The observation in the field indicates that the tsunami struck the plantation from the northeast and casuarinas trees present in about 5 to 6 rows in the frontline absorbed the force of the waves. As a result, trees in these rows are mostly uprooted or bent. In addition, the creek or depression found within the plantation might have also reduced the speed of the waves. Because of the combined effect of the casuarinas plantation, presence of a creek and location of the village relatively away from the sea (about 700 to 800 from the high tide line) loss of lives and property is comparatively less in the Chokkanatharkoil theru. In addition, height of the tsunami water reached the village was only about 4 feet.

On the other hand, Nallianthottam, which is the non-protected settlement selected for comparison and located only about 2 km straight down south of Chokkanatharkoil theru suffered heavily due to lack of any vegetation along the beach.

The physical target fixed for raising mangrove and shelterbelt plantations after the tsunami in the coastal areas of Tamil Nadu are as follows:

Sl No	Circle	Division	Shelterbelt Plantation (In ha)	Mangrove (In ha)
1	Villupuram	Villupuram	220	200
2.	Tiruchi	Wildlife Warden, Nagapattinam	75	150
		Social Forestry Division, Pudukottai	60	150
		Thanjavur division	100	50

3	Virudhunagar	Social Forestry, Ramnad	250	50
		Wildlife Division, Ramnad	55	50
		Sivaganga	325	50
4	Tirunelveli	Social Forestry, Tuticorin	250	-
		Social Forestry, Tirunelveli	65	-
5	Chennai	Social Forestry, Chengalpattu	450	-
		Interface Forestry Division, Thiruvallur	150	-
		Total	**2000**	**700**

Conclusions

Both mangrove and shelterbelt plantations have certainly played a role in mitigating the impact of the tsunami in the villages. It seems these plantations worked in combination with the following other factors to reduce the impact of tsunami waves.

a. Waterways, tidal creeks etc present within the plantation (as in the case of mangroves, which absorbed large quantity of water and thereby reduced the amount of water reaching the landward portion)
b. Sand dunes located near to the village, which deflected water back
c. Presence of other plantations such as coconut and palm groves around villages and
d. Location of villages in elevated area.

Hence, to protect coastal villages from natural calamities such as cyclones, storm surges and tsunami proper site specific land use plan is very important and mangroves wherever possible and shelterbelt plantations should be a part of this land use plan. These site-specific land use plan should provide scope to conserve and stabilize sand dunes, which is one of the neglected ecosystem of the coastal zone. Proper maintenance of estuary, particularly keeping the mouth of the estuary opened for regular tidal flushing and strengthening of banks should also be part of the coastal land use plan.

Tsunami Early Warning System

In the aftermath of the Great Sumatra earthquake of 26th December, 2004, Government of India has set up an Early Warning System for Tsunamis in the Indian Ocean region at Indian National Centre for Ocean Information Services (INCOIS), Hyderabad, which is operating on a 24X7 basis. The system provides advance warnings of Tsunamis likely to affect the coastal areas of the country. In the aftermath of the Great Sumatra earthquake of 26th December, 2004, Government of India Early Warning System for Tsunamis, a Real Time Seismic Monitoring Network (RTSMN) is set up by India Meteorological Department (IMD). The network is designed to monitor and report, in least possible time, the occurrence of earthquakes capable of generating Tsunamis in Indian Ocean region. The data from the seismic field

stations is transmitted simultaneously in real time through V-SAT communication facilities to the Central Receiving Stations (CRSs) located at IMD at New Delhi and INCOIS, Hyderabad for processing and interpretation. The CRSs are equipped with state-of-the-art computing hardware, communication, data processing, visualization and dissemination facilities. The earthquake information shall be disseminated through various communication channels to all concerned user agencies in a fully automated mode. The Warning System has been established by MoES as the nodal ministry in collaboration with Department of Science and Technology (DST), Department of Space (DOS) and the Council of Scientific and Industrial Research (CSIR).

The National Early Warning Centre generates and disseminates timely advisories to the Control Room of the Ministry of Home Affairs for further dissemination to the Public. For the dissemination of alerts to MHA a satellite-based virtual private network for disaster management support (VPN DMS) has been established. This network enables early warning centre to disseminate warnings to the MHA, as well as to the State Emergency Operations Centres. In addition, Messages would be sent by Phone, Fax, SMS and e-mails to authorised officials. In case of confirmed warnings, the National Early Warning Centre is being equipped with necessary facilities to disseminate the advisories directly to the administrators, media and public through SMS, e-mail, Fax, etc. The cyclone warning network of IMD and electronic ocean information boards of INCOIS could be effectively used for dissemination of warnings directly to the public.

Awareness

The general awareness in the country about the disasters, particularly tsunami, is not good mainly due to the tsunami like disaster has occurred first time in the country and also due to il-literacy in the coastal area, the education of disaster mitigation measures was started in the schools after the tsunami only. The details of the awareness programme have been discussed in the chapter below.

e) Restoration

On 26 December 2004, a massive undersea earthquake measuring 8.6 on the Magnitude Width (MW) occurred off the island of Sumatra, Indonesia. It triggered off tidal waves that destroyed large expanses of coastal terrain in Tamil Nadu, Kerala, Andhra Pradesh, Pondichery and Andaman & Nicobar (ANI) Islands.

The tsunami left 10,273 people dead and 5,823 people missing. It also damaged 150,076 houses and 83,788 boats and affected 36,488 livestock and 26,000 hectares (ha) of agricultural land.

A Core Group in the Planning Commission was set up under the direction of Honb'le Prime Minister to coordinate and manage the National Tsunami Reconstruction effort. The Core Group has representation from Central Ministries/ Departments, State Governments, Research Institutions and the Planning Commission. Based on a consultative process, the Core Group has proposed and obtained approval for implementation of a number of rehabilitation initiative, flow of funds for the Gross Budgetary Support (GBS) comprising both Domestic Budgetary Support (DBS) and

Externally Aided Project(EAP) (for the back to back arrangements signed in tripartite agreements with IBRD,ADB and IFAD for States and UTs for purposes of repayment arrangements for the loan components) and programme finalization and implementation mechanism for Tsunami affected States/UTs.

"Challenges posed by the Tsunami should be converted into opportunities for modernizing the coastal and fishing economy"

Hon'ble Prime Minister of India

This is the same philosophy of ***"Build, Back Better than Before"*** as prevailing in Japan.

Damage Assessments and Urgent Relief Provision

The Inter-Ministerial Central Teams (IMCT) set up by GOI conducted damage assessments of Tsunami in coordination with the State/ Union Territories (UT). The assessments of the IMCT and recommendations of the Inter-Ministerial Group (IMG) were considered by the High Level Committee (HLC) set up for calamity relief. "Rajiv Gandhi Rehabilitation Package" was approved with Rs. 3644.05 crores comprising Rs. 1439.39 crore for relief and Rs. 775.51 crore for reconstruction and rehabilitation.

Duration

The duration of the program is for four years beginning 2005-06.

Program Size

The requirement for Tsunami Reconstruction and Rehabilitation estimated by Core Group, on basis of requests from States, and other inputs, are, approximately 2395.63 million $. The total fund requirement is calculated on the basis of requirement programmed on the basis of the damage assessment memorandum submitted by the States/UTs/Central Ministries to the Core Group, Planning Commission. The Sector wise and Sate/UT wise breakup of estimated funds requirement is given in **Annexure 1.**

Funding under the program is from the following sources

I Multilateral (Back to back with states)

II Rajiv Gandhi Package (reconstruction component)

III Budgetary Support from Centre in form of ACA

Rehabilitation Package: Fund Allocation & Sources 2005-06 to 2008-09

	TN	Ker.	AP	P'Chery	ANI	DoS	Core Gr	Total
Funds	1015.93	351.65	51.26	161.89	647.49	165.48	1.94	2395.63
Sources:								
RG Package	268.5	26.7	7.3	20.1	110.7			433.3
Ext. Assistance	652.77	71.65	42.73	45.15				812.30
ACA	94.66	253.3	1.23	96.64	536.79			1150.03
Total	**1015.93**	**351.65**	**51.26**	**161.89**	**647.49**	**165.48**	**1.94**	**2395.63**

Details are at Appendix 2.

The exercise to carry out the first refinement was conducted in January 2007 for purposes of finalizing the actual budgetary commitment for the subsequent years. The Empowered Group of Ministers approved the revised programme for Rs. 9820.10. Funds and the actual requirements of States and UTs, as different from the present broad estimations.

The program has classified the reconstruction requirements under the following heads

I **Housing,**

II **Physical Infrastructure**-a) Roads & Bridges, b) Ports & Jetties

c) Tourism, d) Power Transmission & Distribution Infrastructure

e) Environment & Coastal Protection

III **Livelihood** - a)Fisheries b) Agriculture

IV **Social infrastructure**- a) Health , b) Nutrition , c) Education

d) Panchayat & Public Buildings

After the approval of the Tsunami Rehabilitation Programme by the Government, guidelines for its implementation were prepared, which focused on the following:

Guidelines principles emphasize:

i) Good environment and management practices

ii) Participatory approaches,

iii) Principal of equity to ensure, concern of children and

iv) Transparency & accountability etc.

Monitoring

The quarterly progress of the Tsunami reconstruction and rehabilitation is monitored by the Empowered Group of Ministers (EGOM) and planning commission serve as secretariat to EGOM. The progress in the first three years of the programme is as under:

Summary of work in major sectors

Sectors	Total Damage	Work Done till March, 2007	Target	Actual	Work Done till March, 08	Work Balance
Housing (No. of houses damaged/ to be reconstructed)	85300*	42619	24955	13550	56169	29131 $
Fisheries & Livelihood (No. of boats repaired /to be replaced)	63068	**62683****	**149**	**81**	**62764**	**68**
Agriculture & Livelihood (extent of area in ha. to be	20210 #	16278	1906	497	16775	1100

reclaimed)						
Roads (in Kms.)	**1901**	**856 ^**	**1018**	**475**	**1331**	**994**

f) Education and succession of disaster experience

Human response development at all levels is critical to institutionalization of disaster mitigation strategy. The aim of the Government of India is to build the capabilities of the communities by way of education, awareness campaigns etc., since the community is invariably the first responder in the event of any disaster.

The following steps have been taken to achieve the above goal:

(i) Disaster Management as a subject in the Social Science has been introduced in the school curriculum for Classes VIII, IX and X

(ii) Separate painting books for children on disaster awareness have also been developed for raising awareness

(iii) A mass-media campaign through audio, video and print media as well as publicity through pamphlets, posters, bus back panels etc. has been initiated. The posters are being prominently displayed at buildings like Primary Health Care Centres, Community Centres, Schools and such other places where villagers normally congregate for community activity

(iv) A Disaster Risk Management Programme (DRMP) has been undertaken in 169 most hazard prone districts in 17 States to further spread the awareness among the communities. Under this programme, Disaster Management Plans have been prepared for villages, gram panchayats, blocks and districts. Elected representatives of Panchayati Raj Institutions have been imparted training which, in turn, will help raising the awareness level of the community. District Management Committees consisting of elected representatives of civil society members, civil defence volunteers and Government functionaries at all levels have been constituted and are being imparted training in basic functions of first aid, rescue, evacuation and related issues. Mock drills are carried out from time to time under the close supervision of District Magistrate.

(v) For enhancing the capabilities of communities, it is equally important that capabilities of government functionaries and village organizations are also strengthened. The National Centre for Disaster Management at the national level has been upgraded and designated as National Institute of Disaster Management (NIDM). It has been developed

as a regional Centre of Excellence in Asia. The institute would, inter alia, develop training modules at different levels, undertake training of trainers and organize training for planners, administrators and command functionaries to equip them better before they pass on this knowledge to the local level.

(vi) Disaster Management Faculties have been created in State level training institutions. These training institutions take up several thousand training programmes for different target groups within the State.

Some of the above disaster mitigation measures were in practice before the tsunami. But after the tsunami, the same are being aligned with the tsunami countermeasures also.

Succession of disaster experience

As India had no experience about a disaster like tsunami, succession of such an experience is not prevalent in the country. However, after the 2004 tsunami, particular stress is being laid on ensuring that the above measures are institutionalized. To learn from past experiences, including sharing of best practices, the Ministry of Home Affairs has compiled/prepared a set of resource materials developed by various organizations/institutions to be replicated and disseminated by the State Governments based on their vulnerabilities after translating the same into local languages. As in the case of Japan, erection of monuments at selected places could be a good option for India as an awareness measure.

It is hoped that the above initiatives would make prevention and mitigation a part of normal day-to-day life of communities.

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2. Impression of Tsunami Countermeasures in Japan

2.1 Valuable and weak points

Japan, due to its unique geographical, topographical and meteorological condition, has experienced several major and minor disasters causing severe damages to the human lives, property, livelihoods and overall economy. However, instead of getting devastated again and again, Japan took a lesson from each such disaster and evolved a very effective Disaster Management System (DMS).

Strengths

(i) Vast experience in dealing with disasters;
(ii) Establishment of appropriate institutions and legal systems based on the findings after each disaster;
(iii) Mainstreaming of disaster into development efforts;
(iv) Clear demarcation of responsibilities among the national, prefectural and local authorities/institutions;
(v) Putting in place a very effective warning system;
(vi) Major emphasis on making the community resilient through several types of awareness programmes such as (a) inclusion of disaster education in the school curriculum (b) active involvement of residents in preparation of hazard maps and mapping of dangerous spots in the maps (c) mock drills (d) promotion of self help and mutual assistance among the residents (e) nurturing the feeling of 'sense of belonging' among the residents about the countermeasures taken by the Government (e.g. structures, coastal forests, evacuation camps and routes etc.); and
(vii) Keeping the community vigilant about the disasters by way of putting memorials at appropriate places.

All the above measures, with the passage of time, have resulted in putting in place a very effective disaster management system with a strong resilient community.

Weaknesses

(i) Even though tsunami warning can be issued within three to five minutes, effective evacuation may not be possible in case of a near shore tsunami;
(ii) Absence of established standard for conveying information to the people;
(iii) Facilities for communicating information to visitors, tourists are inadequate;
(iv) Absence of effective system for providing timely information to moving vehicles, watercrafts, running trains etc.;
(v) Concentration of considerable population in the coastal area and in the low lying area;
(vi) Many of the structures for protecting tsunami have low height with respect to a big tsunami which may result in high casualty;
(vii) In case of big tsunami height, percentage of people evacuating to higher places may be low as the present measures to provide information to the public to understand the true nature of tsunami appears insufficient;

(viii) Absence of adequate shelters, evacuation places and designated buildings to be used as evacuation places in the event of tsunami;

(ix) Lack of evacuation by the people during the actual happening of disaster (in many surveys, it was found that even though the people knew about the severity of disasters, they did not evacuate in the event of actual happenings;

(x) As Japan has not experienced a big tsunami after 1933 tsunami occurred in Sanriku area, the present generation may not be aware of the actual fury of tsunami hazard; and

(xi) Presence of storage facilities for hazardous and noxious material such as LNG and marines vessels near the coastline.

2.2 Most impressive/interesting activities for tsunami disaster in Japan

Japan has several impressive/interesting countermeasures against tsunami. The legal/institutional arrangements, effective early warning system, structural measures such as break waters, sea walls and embankments; non-structural measure such as coastal forest, measures taken to raise the awareness level among the residents have all been quite impressive. However, one activity that has impressed a lot is the level of awareness among the residents in the entire hazard prone areas and it is something which needs to be emulated.

Major cause for the high level of awareness can be attributed to the frequency of disasters which the citizens face and that has made them aware of the impacts such disasters have. The residents, in turn, have made the disaster management a part of their normal day-to-day life.

However, credit has to be given to the authorities/individuals also who, over a period of time, have made the people aware about the disasters through several measures such as education, teachings, drills, memorials etc. For example, local municipalities which prepare the hazard maps, ensure that people are aware of it so that in case of disaster they can take countermeasures. People also try to familiarize themselves with the evacuation routes, evacuation places, dangerous routes etc. so that in the event of disaster, evacuation could be effected with ease and greater success. Tsunami drill is another important activity which is keeping people aware and prepared about the disasters.

Tsunami education in schools and in particular the play staged by the children in Ryori Elementary School is one such aspect which really impresses a lot. **Similarly, the recitation of Inamura-no-hi by the children of Hiro Elementary School in the Hirokawa town was another classic example of educating the children about the potential dangers of disasters in particular tsunami**. Targeting the basic foundation of the society as the guardian for tsunami disaster is something which needs to be given a thought by the countries affected by the disasters like tsunami. If the children are educated about the disaster preparedness and mitigation measures, they can be a medium for such awareness for their parents also. After growing into adult, they can pass on this education to their off-springs also. This will result in continuity of the disaster education for several generations.

Setting up of memorials for tsunami victim is another classic example of reminding people about the severity of tsunami. Since tsunami is not a very regular phenomena, people tend to forget it. Japan, in the recent years, has also not experienced any major tsunami, hence, these memorials can always

remind people about the happenings in the past which, in turn, can keep them vigilant about any impending tsunami danger.

2.3 Activities for tsunami disaster in Japan and our country – a comparision

Japan

Japan, due to its vast experience in dealing with disasters in particular the tsunami, has been able to put in place an effective disaster management system. The disaster management system in Japan comprises the following:

- Legal/institutional measures;
- Structural measures; and
- Non-structural measures.

Under the legal/institutional measures, Japan has enacted a number of Acts and Regulations as also the institutions to deal effectively with the disasters. Structural measures such as break waters, sea walls, embankments, tsunami gates, dykes etc. as a countermeasure have been erected in all the tsunami prone areas. With the help of various tide gauge stations, sensors, seismometers etc., Japan has been able to develop a highly responsive early warning system which can disseminate tsunami warning within 5 minutes. Coastal forest as non-structural measure has been combined with structural measures so as to further dissipate tsunami waves. In towns/villages, measures such as preparation of tsunami hazard maps, evacuation routes, evacuation shelters, temporary evacuation places etc. have been properly maintained so as to deal with any impending danger. Mock drills are undertaken at regular intervals by the local authorities to keep all the facilities as well as the residents in disaster mode. Disaster education as well as disaster related activities in the school is another tool used to make children aware about the tsunami danger.

India

India, due to tsunami being a new phenomena, had to face serious damages in terms of loss of lives, properties, livelihoods and infrastructure. However, several countermeasures have been taken to deal effectively with disasters and in particular with tsunami. In terms of legal/institutional measures, the Disaster Management Act, 2005 has been enacted and authorities at the national, (NDMA), state (SDMA) and district (DDMA) level have been set up. The setting up of such specialized authorities will help institutionalize the disaster countermeasures. An early warning system has also been set up after the tsunami of 2004. However, this needs to be networked effectively with the local areas so as to disseminate timely information. Restoration of damaged structures such as sea walls, embankments etc. is being done and construction of new structures has also been taken up at many places. Provision of coastal vegetation as another tsunami countermeasure has been made. Several steps to raise awareness level of residents against the tsunami are also being taken.
All these efforts, although relatively new in comparison to Japan, are expected to act as effective countermeasures against tsunami in future.

3.Proposed Activities in our country

(based on knowledge from the CDPT Course)

3.1 Problems of countermeasures in our country

Japan has adopted both structural and non-structural countermeasures for tsunami mitigation. Even after having considerable countermeasures, a lot of emphasis on research activities for further development of new ideas is given. There are specialized institutions and organizations which are doing research work to further improve the system. Similar efforts are being taken by individuals also (in Sanriku coastal area) to develop some kind of small measurement instruments. Even in case of community, the local Government is leaving no stone unturned in educating them continuously about the potential danger of tsunami. All these efforts are indicating towards the resolve of the Japanese people against their fight with tsunami.

In India also, Government has started focusing on the disaster management. Several measures have been taken to mitigate the disasters and make the community resilient. However, there are certain bottlenecks in smooth execution of all such measures.

Earlier, more attention was paid to response, relief and rehabilitation after the disaster had struck. The idea was more inclined towards taking measures after the disaster had happened. Hence, mitigation efforts could not be taken to the desired level.

Efforts to integrate the disaster mitigation into development efforts have been made in the past. However, these efforts have not been realized fully particularly at the local level. Disaster management, as a subject matter, comes under the purview of the State Governments. While some of them have been able to institutionalize the disaster management, remaining are still in the process of integrating them into their own development efforts.

India is a vast country with a billion people strength. The country has witnessed a rapid growth in many sectors. However, there are still some sections of society to which the benefits of growth have not percolated to the desired level. In such a scenario, the focus of the Governments is shifted to other pressing development work and the disaster management aspect remains neglected. Moreover, disaster mitigation is an investment and its result is visible only after the disaster occurs. Very often, due to longer gestation period, focus is shifted to some other major pressing priorities.

Most of the Japan's coastal towns and villages are situated in the bays, valleys and surrounded by the mountains. Construction of sea walls, breakwaters and tsunami gates are a little bit easier in such areas as length of such structures is not so much. In case of India, the coastal areas are mainly plain land where the length of such construction will be too much and it will prove to be quite expensive. However, India has such structures in some parts and work on setting up new structures (both hard and soft) is also going on.

People living in the coastal area are mainly fishermen and their livelihood is dependent on fishing only. They are poor and il-literate as well. Due to their occupation, they live near the sea coast. Raising awareness among these people is a challenge. Even after undertaking awareness programmes in those areas, people have not been sensitized much.

3.2 Activities proposed to be undertaken after the training course

As we know, 'no size fits all'. Countermeasures taken by Japan, though very impressive, may or may not work in other countries because every country has its own administrative set up as also the geographical condition. Besides, every individual has been assigned a specific role in their respective organizations.

Needless to say, the countermeasures implemented by Japan are quite impressive and, therefore, our suggestion to the Government on the tsunami countermeasures would focus around the following broad parameters:

(i) disaster mitigation and preparedness are as important as the response, relief and rehabilitation
(ii) awareness among the citizens particularly the vulnerable section of society is most important and may be done on a priority basis
(iii) effective participation of residents in the planning and implementation of disaster related activities may be ensured.

Individually, our propose to advise the Government to promote the following tsunami countermeasures:

A. (Mr. L.P. Sonkar)

(i) strengthening of awareness programme and the information dissemination system
(ii) review of existing legal framework for disaster management and to amend the Act for tsunami countermeasures in the line of 'Disaster Countermeasure Basic Act' prevailing in Japan, if needed
(iii) review of existing structural and non-structural measures and to take up suitable location –wise measures, based on the study.

Awareness Programme

In the School level education system so far the course on Disaster and the preventive measures have been introduced at class VIII and IX th standard but it needs to be started at elementary education system .Thus the children have to know about natural disaster and also about the preventive measures. Normally the parents are not aware about what is disaster, particularly the Tsunami disaster. They have to be also informed through either Parent –Teacher meeting or the society / community should inform them by meeting them or by circulating the pampalet.The major problem in India is still the people at coastal area and even other area is not educated. In this situation Voluntary Group has to go to the people and to make them aware about tsunami counter measures.

About the information system,,although we have already set up the Tsunami Early Warning System, but what we need to link with the broadcasting system and also to ensure that the information is communicated to the local level. Strengthening below district level warning system in the State/UT and system of warning of fishermen in coastal waters, high seas and coastal communities are to be

taken on the line of systems prevailing in Japan. All programs submitted need to have synergy with the Tsunami Early Warning System initiated by the Department of Ocean Development, Government of India.

Legal Framework

Just after the Tsunami ,in 2005, Disaster Management Bill was passed by the Parliament and National Disaster Management Authority (NDMA) has been set up at the Centre and the State Disaster Management Authority (SDMA) at the State level. .However the existing rules and the acts need to be reviewed and amended if needed . in the line of disaster countermeasure basic act and other various law prevailing in Japan which are very effective. It will help in strengthening the institutional arrangements for effective disaster management besides accountability and responsibility for assigned task to different authorities at the National, State and District level.

Structural and Non-structural measures

India has the coastal length of about 6500 kms covering thirteen states. Even before the occurrence of the Tsunami in the Indian coast, there were structural and non structural measures existing. The seawall in karaikal district of Pudducherry was prepared by the French people when they were ruling in that state but this sea wall got damaged due to Tsunami. Some of the coastal forests which were existed before tsunami also got damaged..The programme can be envisaged as under

Bio-Fencing

Mangrove plantations along the coastline as shelterbelts preferably through Joint Forest Management mechanism.

Sea walls

Repair of existing coastal protection infrastructure and construction of **New Sea Walls** can be done based on scientific study to determine the location-specific mitigation measures considering the likely environmental impacts. New sea wall works will be taken up in the second phase of the Tsunami Rehabilitation Program.

B. (Mr. Ujjwal Kumar)

As I have been placed in a division dealing with externally aided programmes, my job involves supervision of UNDP programmes in India. Given the sphere of work, my proposed course of action would revolve around the following focus areas:

(i) there is a need to shift the focus from response, relief and rehabilitation to mitigation;
(ii) specific plans for the hazard prone areas;
(iii) enhancement of institutional and community capacities;
(iv) participation of the community in the mitigation process;
(v) awareness campaign on a large scale needs to be initiated; and
(vi) priority to the projects on mitigation.

UNDP's development assistance to India is channelized through Country Cooperation Framework which is co-terminus with India's five year plan. The priority areas of cooperation are finalized in accordance with the Government's priorities and goals during the plan cycle. The last programme cycle was for the period 2003-07. Government of India has entered into a new programme cycle with the UNDP which has become effective this year and will remain in force till December, 2012. 'Crisis prevention and recovery' was one of the priority areas during the previous programme cycle. This is one of the priority areas in the present cycle also.

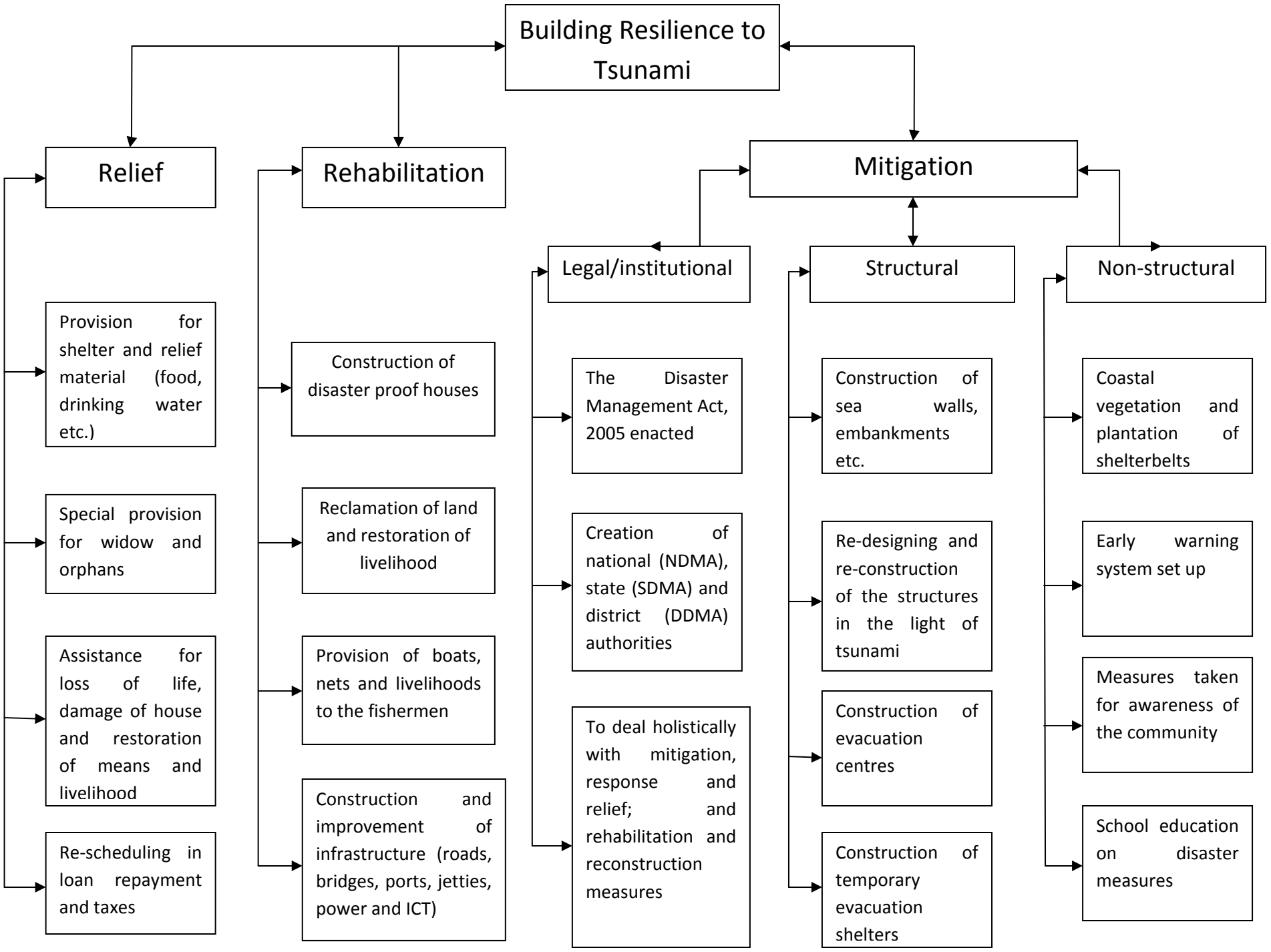
The following programmes were undertaken during the previous cycle and are still in operation:

a) post Tsunami Rehabilitation Programme (TRP)
b) Disaster Risk Management Programme(DRMP)

While the first progarmme deals with the post tsunami rehabilitation of the people in the affected areas, the second programme is all about enhancing the capacities of institutions at the national, state and the local level and the communities. DRMP aims to contribute towards the social and economic development goals of the National Government and also enable the State Governments to minimize loss of development gains from natural disasters and reduce vulnerability. It is being executed in 169 most hazard prone districts of 17 states. The focus of the programme is on awareness generation and education, training and capacity development for mitigation and better preparedness in terms of disaster risk management recovery at community, district and state levels, and strengthening of state and district emergency operation centres for accurate and timely dissemination of warning. A wide representation of women has been envisaged in the project. The programme components include capacity building of disaster management teams, training, awareness programmes, drills etc.

Both the above programmes are coming to an end on 31.12.2008. In the future progarmmes which will be coming in a few months under the current programme cycle, my effort would be to utilize the knowledge acquired through this training course in the area of tsunami mitigation.

A tree diagram indicating the activities for tsunami mitigation is also given below:


Building Resilience to Tsunami
Relief
Rehabilitation
Mitigation
Legal/institutional
Structural
Non-structural
Provision for shelter and relief material (food, drinking water etc.)
Special provision for widow and orphans
Assistance for loss of life, damage of house and restoration of means and livelihood
Re-scheduling in loan repayment and taxes
Construction of disaster proof houses
Reclamation of land and restoration of livelihood
Provision of boats, nets and livelihoods to the fishermen
Construction and improvement of infrastructure (roads, bridges, ports, jetties, power and ICT)
The Disaster Management Act, 2005 enacted
Creation of national (NDMA), state (SDMA) and district (DDMA) authorities
To deal holistically with mitigation, response and relief; and rehabilitation and reconstruction measures
Construction of sea walls, embankments etc.
Re-designing and re-construction of the structures in the light of tsunami
Construction of evacuation centres
Construction of temporary evacuation shelters
Coastal vegetation and plantation of shelterbelts
Early warning system set up
Measures taken for awareness of the community
School education on disaster measures

3.3 Time schedule for proposed activities

Time schedule for the proposed activities is given in the detailed Individual Action Plans and is given at Annexure 2 (Mr. L.P. Sonkar) and Annexure 3 (Mr. Ujjwal Kumar).

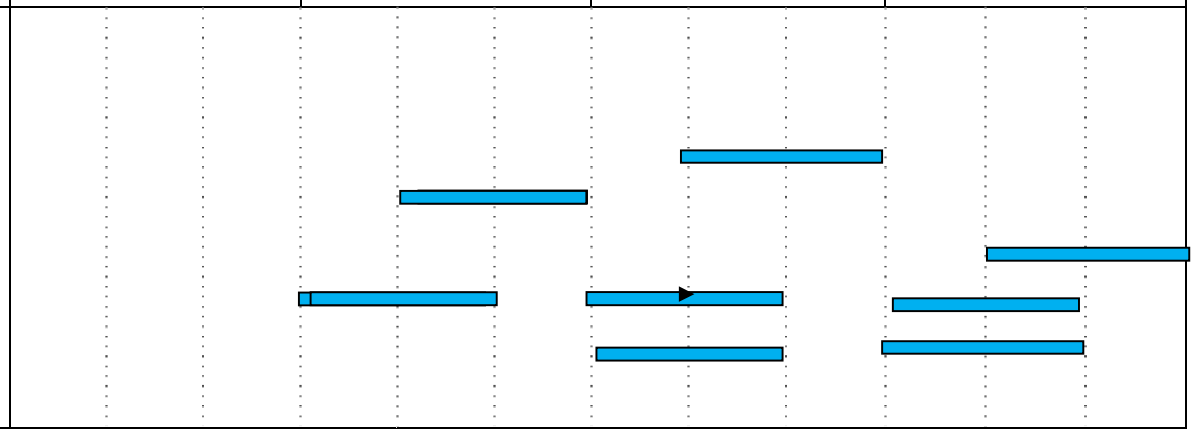
Annexure 1

Sector-wise & State-wise Breakup of Fund Requirement (FY: 2005-06 to FY: 2008-09) (million dollar)

UT/ State/ GoI	Housing	Fisheries & Liveli. (*)	Agri & Liveli.	Ports & Jetties	Roads & Bridges	Power & ICT	Water & Sewerage	Social Infra & Welfare	Envt & Coastal Protection	Tourism	Misc.	TA	Total
TN	681.72	61.22	3.58	19.23	134.44	1.63	30.98	31.44	11.39	0	30.24	10.04	1015.93
KER	11.11	39.71	5.57	10.74	22.56	17.80	32.24	35.66	121.39	24.39	24.39	6.10	351.65
AP	0.56	6.75	0	0	#	0	0	21.37	21.37	0	0	1.22	51.26
PUD	26.36	50.56	3.49	0.24	23.75	1.68	3.83	7.67	39.05	0	1.10	4.15	161.89
ANI	297.80	36.20	52.86	73.06	48.83	50.82	9.25	50.65	6.78	16.34	2.44	2.44	647.49
Sub Total	1017.55	194.44	65.50	103.28	229.59	71.94	76.30	146.79	199.97	40.73	58.17	23.95	2228.21
DoS				165.48									165.48
Core Group												1.94	1.94
Total	1017.55	194.44	65.50	268.76	229.59	71.94	76.30	146.79	199.97	40.73	58.17	25.89	2395.63

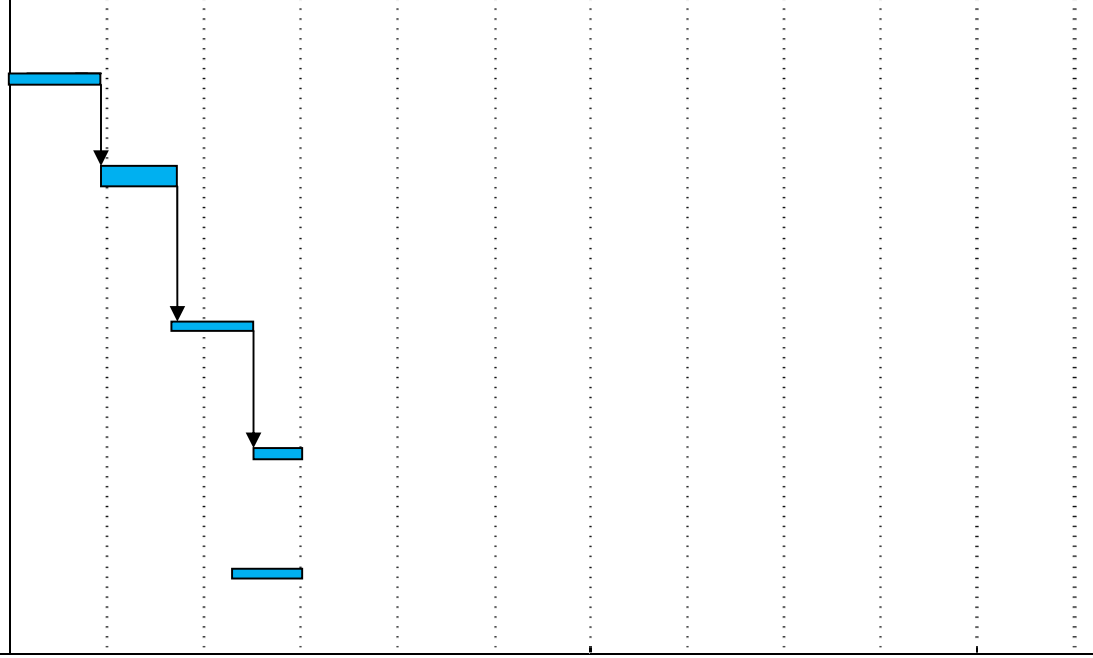
(*) does not include the loan component of 155.91 **million dollar** as indicated in Rajiv Gandhi package for boats -DoS: - Department of Shipping; (~) includes agriculture and fisheries livelihood; (#) projects in pipeline with EAP assistance

Action Plan Name of person in charge: L.P.SONKAR Country: INDIA Date: 7-7-2008

Operation	indicator	1st Year	2nd year	3rd year	4th year
Reconstruction &Rehabilitation of Tsunami Damage	• Physical progress • Financial progress • Beneficiaries satisfaction				

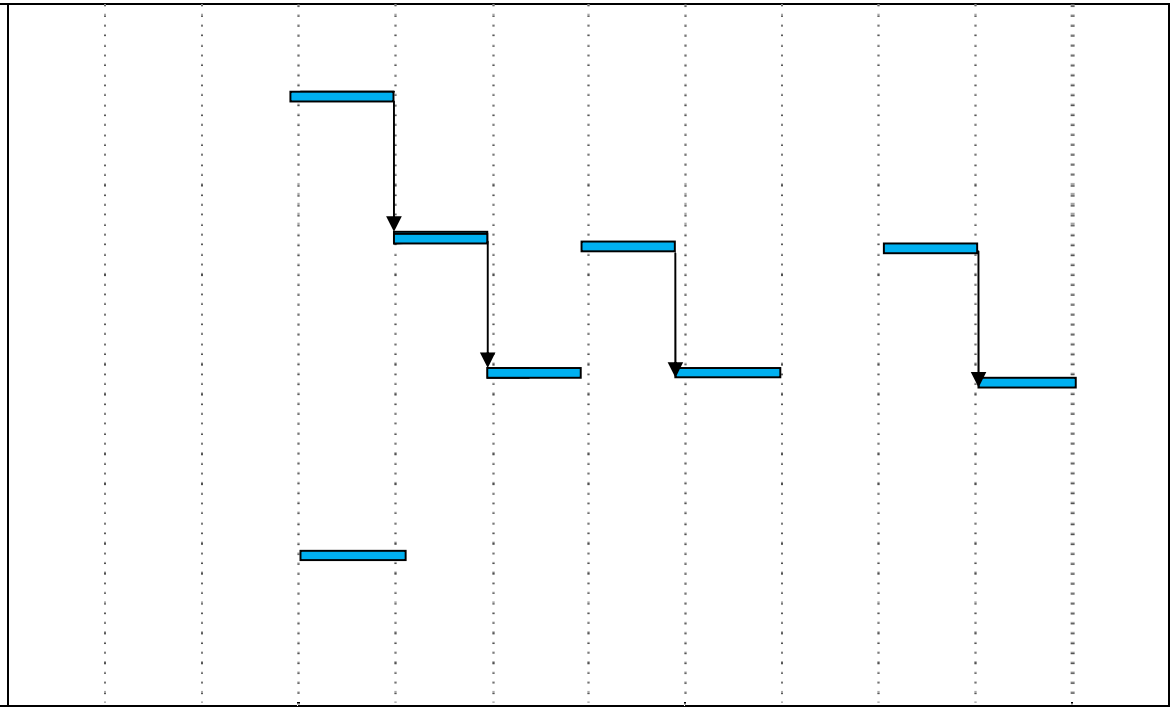
Action Plan Name of person in charge: L.P.SONKAR Country: INDIA Date: 7-7-2008

	In charge		1st Year	2nd year	3rd year	4th year
1.Planning						
1.1 Damage Assessment	Planning Commission	Home Ministry				
1.2 Requirement of funds	Planning Commission	Finance Ministry				
1.3. Funding tie up /Resource assessment	Finance Ministry	World Bank,ADB, multilateral agencies				
1.4 Formulation of Plan and its approval	Planning Commission	Central ministries				
1.5. Preparation of guidelines, approval and circulation to states governments	Planning Commission	States Govts.				

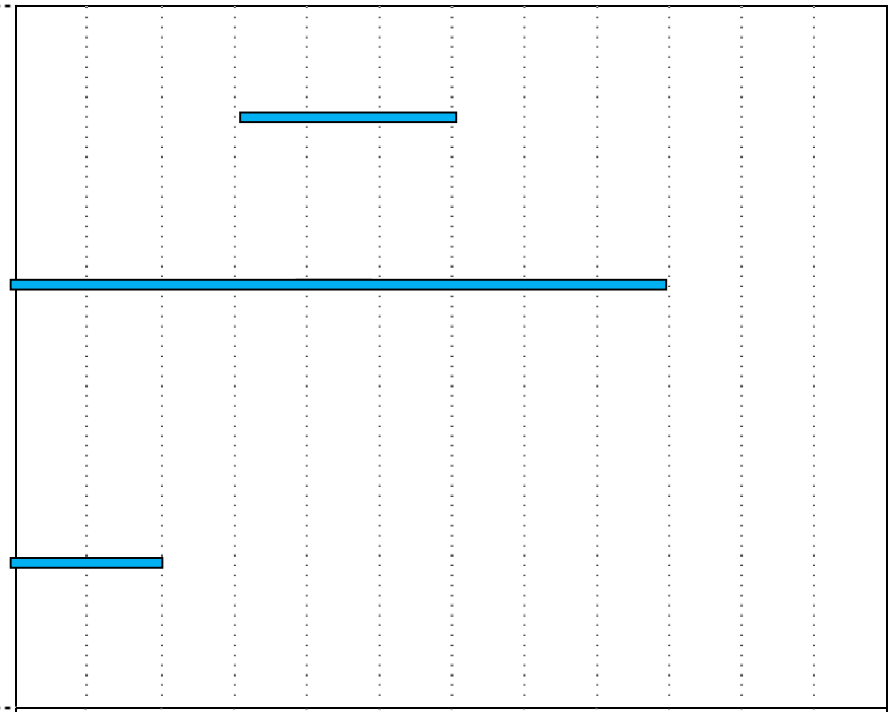


Action Plan Name of person in charge: L.P.SONKAR Country: INDIA Date: 7-7-2008

2. Monitoring & Evaluation			
2.1. Design of prescribed formats and circulation to states,	Planning commission	States Govts.	
2.2. Collection of information in the formats from states,	Planning Commission		
2.3. Analysing the information/data and preparation of notes for consideration of EGOM .	Planning Commission	Central ministries	
2.4.Assigned study various programme for Evaluation purpose	Planning Commission	States Govts./ institution	



Action Plan Name of person in charge: L.P.SONKAR Country: INDIA Date: 7-7-2008

3. Tsunami Preventive Measures 3.1.Organising workshop for state govts.official for preventive measures	Pl.Comm.	States Govts.	
3.2.Workshops for states govts.to take up awareness programme through SHG/Community approach,	States Govts	SHGs/Community	
3.3 Advise Central Govt. to start tsunami counter measures programme at elementary school level.	Planning commission	Home Ministry, Ministry of Human Resources	
< In put > • Personnel /manpower • • Resource /Budget • Capacity building	• Administration Planning commission • Financial Resource Division • Training Cell Planning commission	• Department. of Personnel • Finance Ministry • Department of Personnel training	

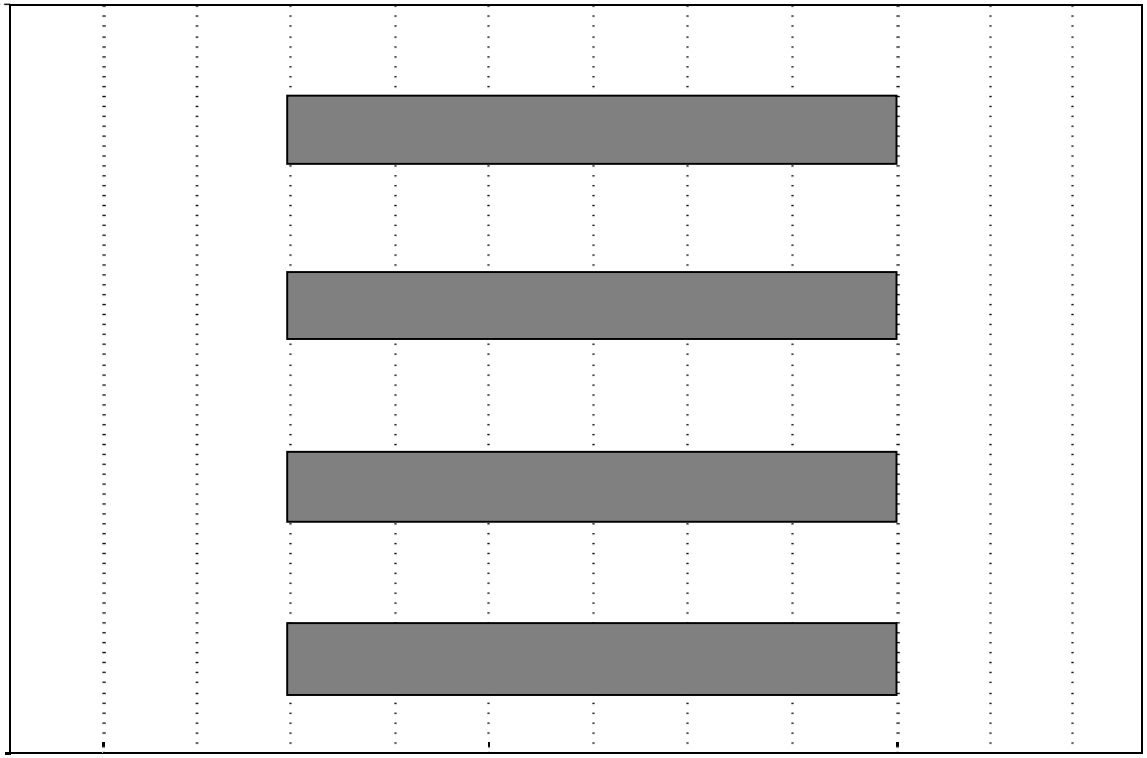
Action Plan Name of person in charge: L.P.SONKAR Country: INDIA Date: 7-7-2008

Action Plan Name of person in charge: Ujjwal Kumar Country: India Date: 7.7.08

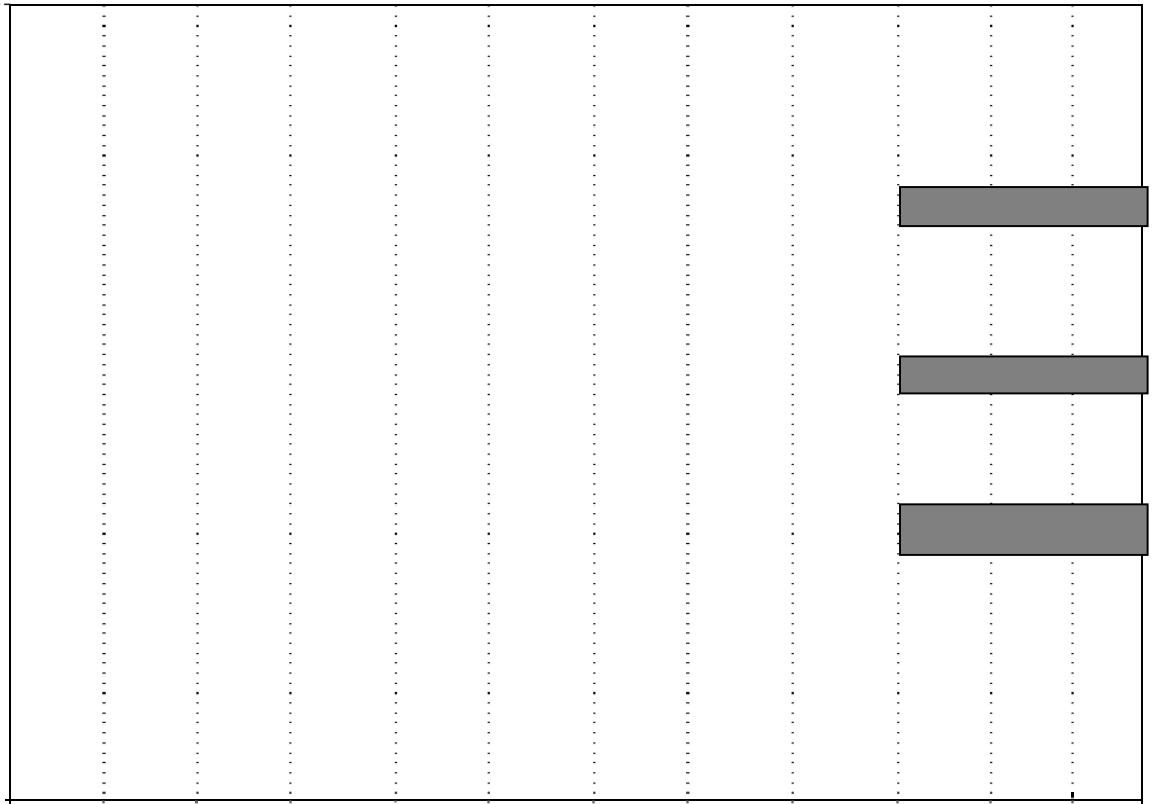
Operation	indicator	1st Year	2nd Year	3rd Year	4th Year
Supervision of UNDP projects under the thematic area 'Crisis Prevention and Recovery'	• Number of State plans for coordinated recovery • Number of district plans for coordinated recovery • Number of trained communities				

Activities	In charge		1st Year	2nd Year	3rd Year	4th Year
1. Receipt and examination 1.1 Receipt of concept note/project document 1.2 Examination 1.3 Consultation with Min./Deptt./State Gov./UNDP 1.4 Revision, if necessary 1.5 Approval	DEA	Line Ministry/ Deptt./ State Govts./ UNDP				

Action Plan Name of person in charge: Ujjwal Kumar Country: India Date: 7.7.08

2.Strengthening of institutional set up 2.1Addressing disaster management issues 2.2 Incorporation of strategies for recovery in State plans in focus States 2.3 Incorporation of strategies for recovery in District plans 2.4 Preparation of training manuals	Line Ministry/ Deptt./ State Govts./ UNDP	Institutions /Organizations/NGOs/ CBOs etc.	

Action Plan Name of person in charge: Ujjwal Kumar Country: India Date: 7.7.08

3.Community preparedness activities 3.1Training in first aid, rescue, search and shelter management 3.2 Incorporation of disaster management education in school curricula 3.3 Evaluation studies	Line Ministry/ Deptt./ State Govts./ UNDP	Institutions /Organizations/NGOs/ CBOs etc.	
< In put > o Personnel o Equipment & material o Budget