## UN-SPIDER United Nations International Conference on Space- Based Technologies for Disaster Management



**Presentation by** 

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Additional Chief Secretary / Commissioner of Revenue Administration and State Relief Commissioner (R)

## Venue City: Beijing

## Date: 14/09/2015 to 16/09/2015

#### **Session II**

Earth observation in enhancing preparedness for effective response

### Priority 4: Enhancing disaster preparedness for effective response

- 1. District Disaster Management Authority meeting
- 2. Forecasting Monsoon meeting
- 3. Standard drill
- 4. Preparedness for cyclone
- 5. Regular drills for Police, Fire & Rescue
- 6. Village level disaster preparedness training

### **Session IV**

**Empowering the communities to prepare for disasters** 

### Priority 7: Availability and access to Early Warning Systems

- 1. District Disaster Management Authority meeting
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### **Disaster - At a Glance**

- The natural disasters (Earthquakes, Landslides, Floods, Tsunamis, etc.,) are growing like epidemics around the world
- In Indian Peninsular also, these disasters which were known only in The Himalayas have now started spreading to all over the country
- For example, many disasters which were once confined to The Himalayas now started in entire peninsular India
- Earthquakes to Gujarat, Madhyapradesh, Maharashtra, Kerala & Tamil Nadu
- Landslides to almost all mountain belts of India
- Floods to Rajasthan desert, Gujarat, even T.N.
- Now the tsunami opened near chapter in T.N.

# **Disasters in India**

- Moving away from the Great Bengal famine of 1769-1770 in which a third of the population perished.
- The Chalisa famine of 1783, the Doji Bara or Skull famine of 1790 to 1792, the North West Provinces famine of 1838, the North West India Famine of 1861, the Bengal and Orissa famine of 1866, the Rajputana famine of 1869, the famine of 1899 to 1901, the Bengal famine of 1943...
- The drought years of 1965, 1972, 1979, 1987, 2002

# India's Vulnerability to Disasters

- 57% land is vulnerable to earthquakes. Of these, 12% is vulnerable to severe earthquakes.
- 68% land is vulnerable to drought.
- 12% land is vulnerable to floods.
- 8% land is vulnerable to cyclones.
- Apart from natural disasters, some cities in India are also vulnerable to chemical and industrial disasters and man-made disasters.

### Tsunami - At a Glance

#### •TSUNAMI – "Harbour wave"

• Tsunami – are large waves that are generated when the sea floor is deformed by seismic activity

•Tsunami wave caused by

Coastal earthquakes Under sea volcanic eruptions Under sea landslides

•Tsunami is not a single wave, It is series of waves.

•Travel at a speed of more than 800Km/hr.



Frontline, Jan, 2005

## Thus the state of Tamil Nadu has emerged as a multi hazard prone province with

- Seismicity Tectonics activity
- Landslides Intensity of Rainfall and slope
- Floods Frequency of Rainfall (surplus water)
- Tsunamis Under water earthquake / Severe Cyclone
- Cyclone Hydrological changes
- **Drought Deficiency of Water**
- Coastal erosion Wave action

## **Developments in Disaster Management**

High Powered Committee set up in August 1999.

Until 2001 – Responsibility with Agriculture Ministry.

Transferred to Ministry of Home Affairs in June 2002.

National Disaster Management Authority established 28th September 2005.

Inclusion of Disaster Management in the Seventh Schedule of the Constitution.

On 23 December, 2005, Disaster Management Act.

## DISASTER MANAGEMENT ACT, 2005 VISION

"To build <u>A SAFE AND DISASTER RESILIENT INDIA</u> by developing a holistic, proactive, multi-disaster and technology-driven strategy through a culture of prevention, mitigation, preparedness and efficient response."

#### STRATEGY

- A multi-dimensional Strategy, focusing on –
- Pre-disaster Phase:
  - 1. Prevention.
  - 2. Mitigation.
  - 3. Preparedness.
  - 4. Capacity Building (NDRF, SDRF, CD, NCC, NYKS etc).
  - 5. Community based Disaster Management (including Public Awareness).
- Post-disaster Phase:
  - 6. Prompt and Efficient Response Proactive.
  - Reconstruction and Recovery (Building back better)

#### Results of the Change in Orientation at the National Level

- Focus is now more on developing holistic capabilities-not just on response
- Strengthening response mechanisms and capacities
- National Disaster Management Act (2005)
- National Disaster Management Authority (2005)
- National Disaster Management Policy (2005)
- National Institute for Disaster Management established for training Disaster Management stakeholders (2006)
- National Disaster Response Force Instituted in 2006

### TAMILNADU STATE DISASTER MANAGEMENT AGENCY (TNSDMA)

The Government in their order G.O.(Ms)No.488, Revenue [DM-I(2)] Department dated on 28-11-2013 register it under Tamil Nadu Societies Registration Act 1975

**Governing Council** 

Hon'ble Chief Minister of Tamil Nadu :

Hon'ble Minister for Revenue and Chief Secretary to Government:

14 Secretaries to Government as Members and Additional Chief Secretary / Commissioner of Revenue Administration: Chairperson

**Vice-Chairperson** 



## Administrative Setup and Inter-Departmental Coordination

## I. Overall Mechanism

Hon'ble Chief Minister-Chief Secretary-State Relief Commissioner-

Coordination with CRA as Relief Heads of Departments Field Level Review & Monitoring

Key Role in Government

Spearheads State's Disaster Response and Management and he is the Controlling and Monitoring Authority on Disaster Management State Level all Departments done by Commissioner

Critical Tasks District Collectors

## Administrative Setup and Inter-Departmental Coordination

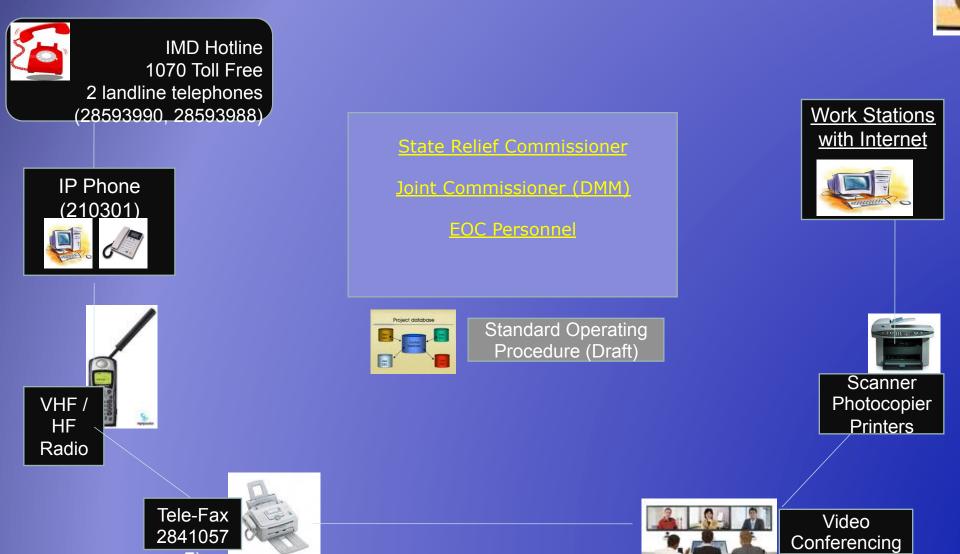
II. Collectors and Superintendent of Police to undertake similar exercise at District Level

- Review of DE silting operations
- Cyclone Shelters and other Relief Centers to be kept ready
- Availability of Food Stocks in Civil Supplies God owns
- Availability of Men and Materials (Gunny Bags and other equipment's) with PWD, Highways, Police, Fire Services, Local Bodies etc.
- Communication Systems to be re-checked
- Coordination with local NGOs, Red Cross, NSS etc.
- Creation of public awareness

## Administrative Setup and Inter-Departmental Coordination III. Control Rooms

- Permanent Control Room or State Emergency Operations Centre in the office of CRA (1070) – 24 x 7 in all 365 days Operation with all manpower, infrastructure and communication equipment's in full strength.
- Control Rooms in District Collectorates (1077) and Departments like PWD and Fisheries
- Constant Touch maintained by CRA's control room with Regional Meteorological Center, Chennai and Indian National Centre for Ocean Information Services (INCOIS), Hyderabad.
- Instant transmission of Warning messages to the District Control Rooms, Departments and Corporations
- Responsiveness of all Control Rooms: State Emergency (1070)

#### Functioning of State EOC (SRC/ CRA's Office) – Round the Clock







## State Emergency Operation Centre (SEOC)

## State Emergency Operation Centre (SEOC)





#### Session IV

Empowering the communities to prepare for disasters

### Priority 7: Availability and access to Early Warning Systems

**DWAS-C** - Central Network operating center at state headquarters

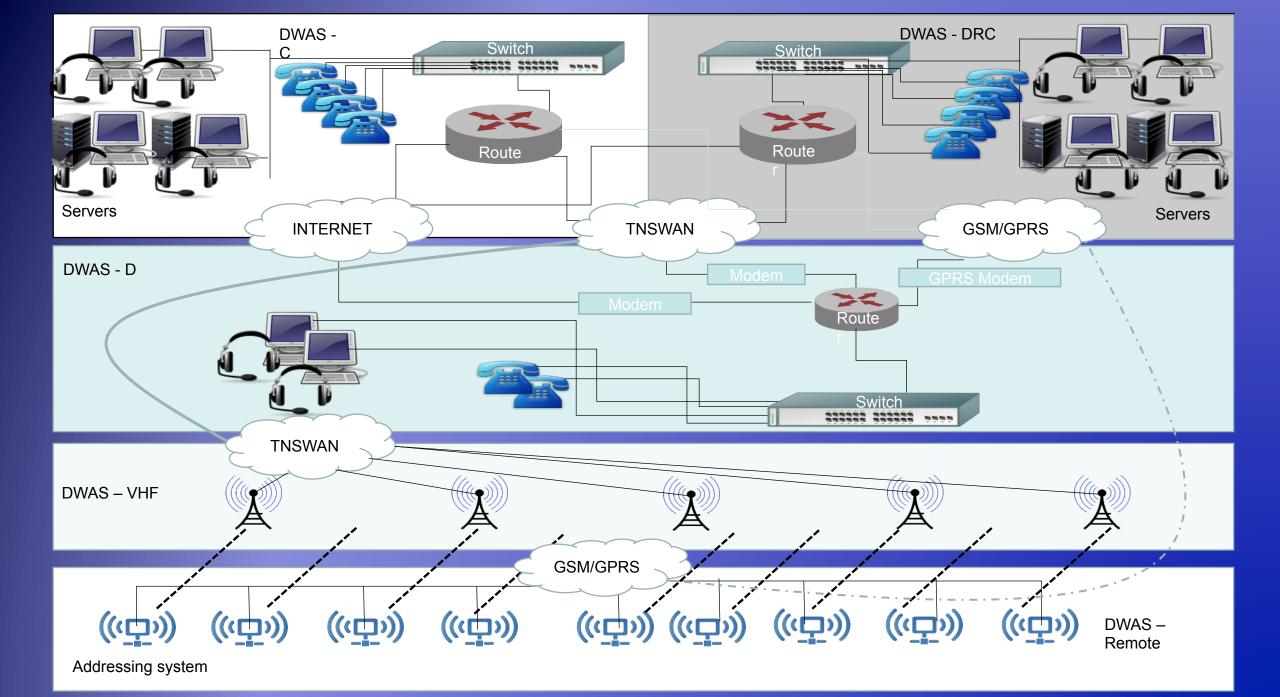
**DWAS-DRC-** Replica of DWAS-C site and will act as a standby mirror redundant NOC at coastal district head quarters (Tirunelveli )

**DWAS-D** - NOC for delivering the services to remote site at the respective district location.

**DWAS-VHF** - This sites comes at the third tier of the network, the uplink to this location will be connected to the NOC via TNSWAN network.

This signal coming from the NOC through TNSWAN network will be carry forwarded to the remote site by a VHF radio working as a base station at this location.

**DWAS-R** - Last mile node of EWS system and will be working as an announcement system, An audio alarm will be generated at this site as per the inputs available from the NOC to warn the citizen to take necessary steps at the locality to evacuate and move the evacuation shelter.



## Provision of Early Warning System (Rs.50 crores)

### **Site selection**

Site location and population details are finalized and the same has been sent to collectors concerned for their concurrence.

### **WPC License**

M/s UTL has applied for WPC license on behalf of Project Management Unit

### **Pilot Scheme**

Action is taken by the firm to install the required system on a pilot basis in Cuddalore district

#### TNSWAN

Ethernet switch location of existing TNSWAN network connection to be extended to DEOC. Concerned collectors have been instructed to convene a meeting with the official of ELCOT, NIC and UTL and report compliance.

#### **ELCOT as Project Manager:**

Third party quality auditing agency have to be finalized by ELCOT – proposal under finalization.

#### **Space for DWAS – D - Unit**

The firm has requested for an area of 12x12 ft in 13 coastal District. The room/building to be handed over to the firm exclusively for installation of DWAS – D unit.

## Resilient Electrical Network Rs 360.00 Crores (TANGEDCO)

 For preparation of DPR, technical firm to be finalized by TANGEDCO.







#### **Challenges in Early Warning Systems**



Sollinganallur Taluk VHF site, Kanchivaram, TN

Kannathur Reddy Kuppam, Kanchivaram, TN

Challenges in Early Warning Systems – VHF Kudimiyandi Thoppu MPES with EWS, , Kanchivaram, TN

#### Challenges in Early Warning Systems – VHF Control Room, Solinganallur Taluk office



**Challenges in Early Warning Systems – VHF** Kudimiyandi Thoppu MPES with EWS, Kanchivaram, TN 

#### **Challenges in Early Warning Systems**

- Sustainability of High-Tech systems in developing states. The cost of high precision.
- Scientific research to understand the dynamics of such regional phenomena as drought and flood.
- Scientific research to understand the dynamics of cyclones triggered by rainfall.
- Introduce Benchmarking and indicators to catalog EWSs.

- Modeling drought and its impacts in the region.
- Improvements to basic EWSs in areas such as hydrologic modeling to:
- Create forecast algorithms.
- Create high-resolution hazard maps.
- Introduce the concept of period of return associated to the intensity of events to generate risk scenarios.
- Systematize successful and unsuccessful experiences and distribute them.

### **Disaster** – Impacts – Early Warning System - Response

## Administrative Setup and Inter-Departmental Coordination

### **IV. Immediate Relief and Restoration Operations**

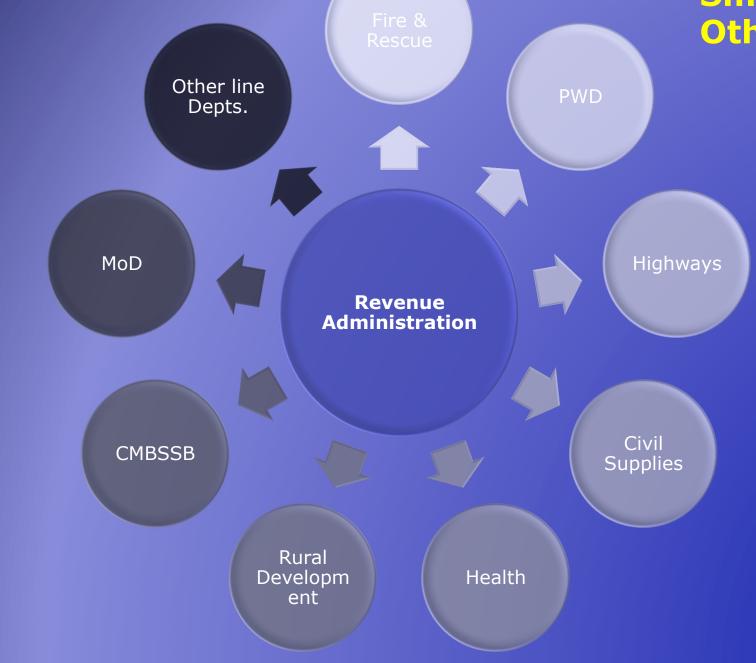
- Relief Disbursements as per SDRF guidelines
- Emphasis on Evacuation and Restoration
- Treasury Rule 27
- Appointment of Zonal Officers
- Daily Review Morning and Evening
- Feedback from field level functionaries and public
- Activating the NGO network.
- Daily situation reports Online (www.tn.gov.in/tsunami)
- Rainfall and Damage reports Intranet / Internet (www.tn.gov.in/tsunami)

## Administrative Setup and Inter-Departmental Coordination

#### V. State Disaster Response Fund (SDRF) & National Disaster Response Fund (NDRF)

- SDRF 75 : 25 contribution by Gol and GoTN Immediate Relief expenditure
- NDRF For Calamities of Rare Severity Funds provided by Gol over and above SDRF
  - Damage Memorandum
  - Visit of Central Team
  - Final decision by Union Cabinet
- Damage Memorandum preparation in coordination with departments and local bodies Very Critical

#### **Smart Coordination Other Departments**





## Disaster – Impacts – Early Warning System – Response - Management

Two views concerning risk: as an entity and as a process.

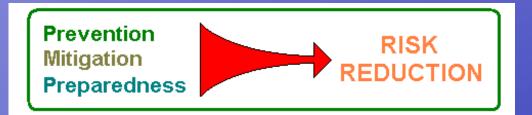
## CONCEPTUAL DEFINITION OF RISK:



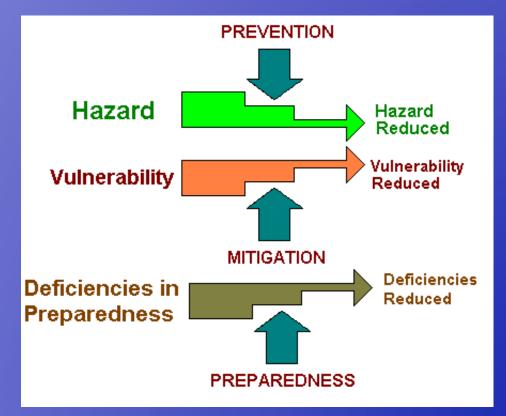
#### **RISK AS A PROCESS** Settlements in hazardous areas R Migration to urban areas Lack of Zoning Ordinances S Lack of Building Codes K **Population Increase** Poverty

TIME

#### Conceptual framework concerning risk management.



Early Warning Systems (EWS) are examples of measures related to preparedness, and complement other measures such a the implementation of emergency committees, emergency planning, posting evacuation routes, simulations, and exercises.



# Lessons Learnt

- Be Prepared : Preparedness and Mitigation is bound to yield more effective returns than distributing relief after a disaster.
- Create a Culture of Preparedness and Prevention.
- Evolve a code of conduct for all stakeholders

# **Future Directions**

- Encourage and consolidate knowledge networks
- Mobilise and train disaster volunteers for more effective preparedness, mitigation and response (NSS, NCC, Scouts and Guides, NYK, Civil Defence, Homeguards)
- Increased capacity building leads to faster vulnerability reduction.
- Learn from best practices in disaster preparedness, mitigation and disaster response

# **Future Directions**

- Mobilising stakeholder participation of Self Help Groups, Women's Groups, Youth Groups, Panchayati Raj Institutions
- Anticipatory Governance: Simulation exercises, Mock drills and Scenario Analysis
- Indigenous knowledge systems and coping practices
- Living with Risk: Community Based Disaster Risk Management
- Inclusive, participatory, gender sensitive, child friendly, eco-friendly and disabled friendly disaster management
- Technology driven but people owned
- Knowledge Management: Documentation and dissemination of good practices
- Public Private Partnership

# **Invest in Preparedness**

- Investments in Preparedness and Prevention (Mitigation) will yield sustainable results, rather than spending money on relief after a disaster.
- Most disasters are predictable, especially in their seasonality and the disaster-prone areas which are vulnerable.
- Communities must be involved in disaster preparedness.

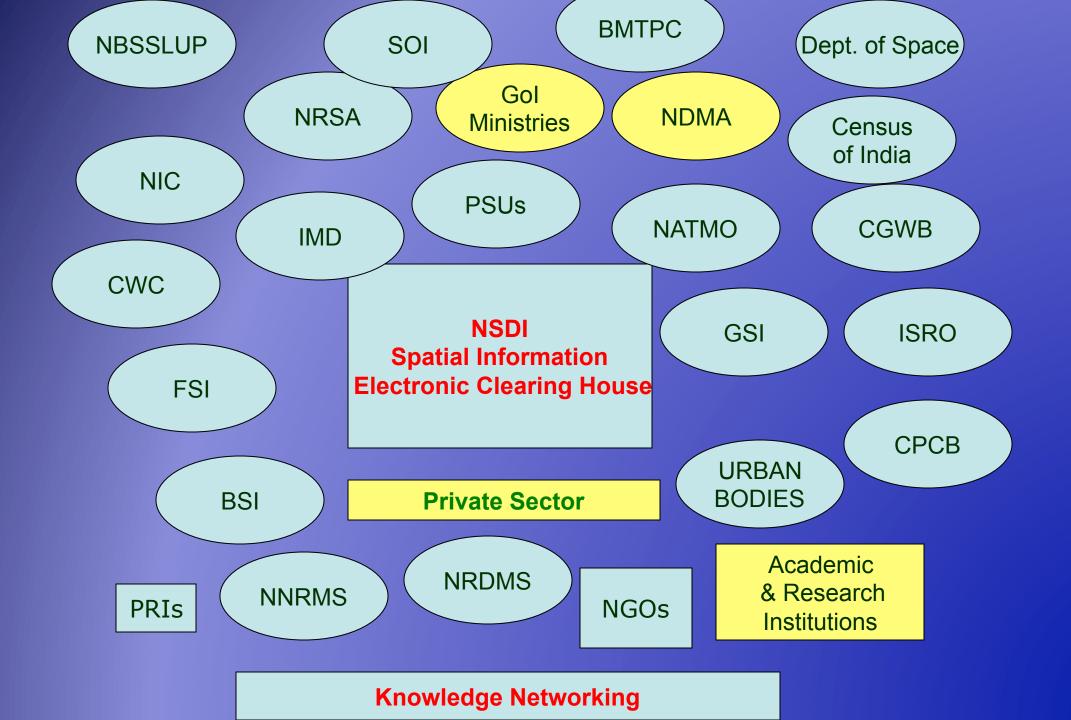
# **Best Practices**

- On 12 November, 1970 a major cyclone hit the coastal belt of Bangladesh at 223 km/hr. with a storm surge of six to nine meters height, killing an estimated 500,000 people.
- Due to the Cyclone Preparedness Program, the April 1991 cyclone with wind speed of 225 km/hr. killed only 138,000 people even though the coastal population had doubled by that time.
- In May 1994, in a similar cyclone with a wind speed of 250 km/hr. only 127 people lost their lives.
- In May 1997, in a cyclone with wind speed of 200 km/hr. only 111 people lost their lives.

## **New possibilities**

- National Urban Renewal Mission for 70 cities: recent experience of "unprecedented" extreme weather conditions in a few major metros and megacities
- 100,000 Rural Knowledge Centres

(IT Kiosks): Need for Spatial e-Governance for informed decision making in disaster-prone areas: before, during and after disasters



# **Disaster – Impacts – Early Warning System** – Response – Management - Mitigation

### **DISASTER MANAGEMENT DEVELOPMENTS IN TAMIL NADU**

#### **Preparedness**

- Re-vitalization of State Disaster Management Agency to support the Authority
- Preparation of SOPs on natural and man-made disasters.
- Establishing an additional State Institute of Disaster Management
- Capacity Building and Awareness Programmes and Mock drills
- Strengthening of State and District Emergency Operation Centre
- Preparation of District Disaster Management Plans
- Setting up of 439 early warning systems
- Construction of 121 Multipurpose Evacuation Shelters with evacuation routes / signage's in the coastal districts.
- Preparation of Hazard, Vulnerability and Risk Analysis study
- Strengthening SDRF
- Community Based Disaster Risk Management Programme
- Curriculum Development for disaster risk reduction in schools and training institutions
- Curriculum Development for Government Training Institutes

### **DISASTER MANAGEMENT DEVELOPMENTS IN TAMIL NADU**

#### **Mitigation**

- Constitution of State Disaster Response Fund
- Constitution of State and District Disaster Mitigation Fund, District Disaster Response
- Fund is under consideration of the Government
- ➤Construction of disaster resistant houses in rural areas between 200-1000 m from HTL.
- >Activities based on learning of the Fisheries Infrastructure Management and
- Sustainable Livelihoods Project (FIMSUL) under tsunami relief and rehabilitation.
- De-silting of lakes and reconstruction of tanks

### **DISASTER MANAGEMENT DEVELOPMENTS IN TAMIL NADU**

#### **Prevention**

- Modernization of fishing harbours, construction of fish landing centres and providing stability to river bar mouths in the tsunami affected areas.
- Shelterbelt and mangrove cultivations in both government and private lands along the coastal areas to prevent storm surge and tsunami
- Laying underground, EB cables in Cuddalore and Nagapattinam districts on pilot basis under Coastal
- Disaster Risk Reduction Project instead of overhead cables to prevent damage during cyclonic periods
- Fixing of stone pillars at HTL (High Tide Line) reference points along the entire coast of the State.



### **GOVERNMENT OF TAMIL NADU**

# Revenue Administration, Disaster Management & Mitigation Department

# **Coastal Disaster Risk Reduction Project**

(assisted by World Bank)

### **Coastal Disaster Risk Reduction Project (CDRRP)**



- This is a 5 year project which covers the ongoing works of the erstwhile Emergency Tsunami Reconstruction Project(ETRP) and the newly Proposed capacity building initiatives in risk reduction/mitigation with an outlay of 1481.80 crore.
- A tripartite agreement with World Bank, GOI and GOTN for the project was signed on 11-11-2013.
- This project will expected to be completed on 31-07-2018

### Components of CDRRP

#### (Rs. Crores)

S1. No.	Description	On going works	New works	Amount sanctioned	
Ι	Vulnerability Reduction				
a	Construction of Multi hazard resistant permanent houses	285.00		1035.00 285.00	
b	Evacuation routes with signage	25.00		25.00	
с	Construction of <b>121</b> Multipurpose Evacuation Shelters	315.00		315.00	
d	Provision of <b>444</b> Early Warning Systems	50.00		50.00	
e	Resilient Electrical network (conversion of over head lines in to underground cables in Cuddalore & Nagapattinam Districts)		360.00	360.00	
Π	Sustainable Fisheries			321.30	
a	Fisheries works on going / New works	120.00	60.00	180.00	
b	Implementation of marine Fisheries co-Management		27.00	27.00	
С	Improved capacities and knowledge Management		5.00	5.00	
d	Fisheries livelihood support		13.00	13.00	
e	Management support		4.00	4.00	
f	Providing Wireless communication facilities to ensure safety of		92.30	92.30	
	Tamil Nadu Marine Fisheries				
III	Disaster Risk Management			52.50	
a	Setting up a Centre for Disaster Management		10.00	10.00	
b	Setting up of comprehensive GIS platform & GIS cell in the SDMA		17.50	17.50	
с	Community Based Disaster Risk Management Programme		15.00	15.00	
d	Curriculum development for Disaster Risk Reduction in School		2.50	2.50	
	and training Institutions				
e	Integrated Coastal Zone Management Plan		7.50	7.50	
IV	Implementation support			73.00	
	Total			1481.80	

## Multi Hazard Resilient Houses Rs.285.00 crores (Rural Development & Panchayat Raj)



அவசரகால சுனாமி மறுகட்டமைப்பு திட்டம் புதுக்கோட்டை மாவட்டம் All the **14,346 houses** along with basic amenities were physically completed by Rural Development and Panchayat Raj Department.

### Evacuation Routes With Signage Rs.25.00 crores (Rural Development & Panchayat Raj)



அவசரகால சுனாமி மறுகட்டமைப்பு திட்டம் அவசர காலங்களில் வெளியேறும் சாலைகள் காஞ்சிபுரம் மாவட்டம் All **143** evacuation routes were completed by Rural Development and Panchayat R a j D e p a r t m e n t i n **13** coastal districts.

### Multipurpose Evacuation Shelters Rs. 315.00 crores (Public Works Department)



SOTHIKUPPAM IN CUDDALORE DISTRICT

**OUT OF 121 EVACUATION SHELTERS** 

- 19 works were completed.
- 43 works are under progress.
- Bids under scrutiny for **17** works.
- Rebids to be called for in **12** works.
- Agreement concluded and work to be started for 16 works.
- Agreement to be concluded for 4 works.
  - **10** works are not yet started due to site dispute/local public abjection / statutory clearances awaited from Environment and Forest Department/Court case.

#### (on going works)

### Sustainable Fisheries Rs.120.00 crores (Fisheries Department)



#### Fish Landing Centre @ Portonova & Annankoil

- Main work completed
- STP works pending

#### Permanent Stability Of Coastal Inlet @ Vellare

- Work completed
- Completion report & Utilization Certificate awaited.

#### Fishing Harbour @ Nagapattinam

- Out of 5 works, 1 work completed and 2 works are under progress.
- Bid Evaluation Report to be sent to PMU in respect for remaining two works.

#### Fishing Harbour @ Palazar

- Out of **5** works, **4** works completed –but STP works pending.
- Bid evaluation report to be sent to PMU for remaining one work

(Ongoing Works)

### **Sustainable Fisheries Continuation**



### Fish Landing Centre @ Nagore

- Out of two works, main work completed. STP work pending.
- Bid under scrutiny for one work
- Permanent stability of coastal Inlet @ Uppanar
  - Dredging work completed for 190000 m<sup>3</sup> against 199572 m<sup>3</sup> further work in progress.

# Establishment of cube ice plant and improvement works

- Civil works completed.
- Erection of ice plant by MPEDA to be done.

(New works)

### **Sustainable Fisheries Rs.60 crores**

- Fishing Harbour at Mallipattinam in Thanjavur District Reconstruction and Modernization of Fishing Harbour.
  - > DPR received at PMU and under consideration.
  - CRZ clearance obtained and action being taken for obtaining the State National level clearances.

Permanent stability of coastal inlet of Thamarabanani River at Punnakayal in Thoothukudi district.

- DPR received at PMU and under consideration
- CRZ clearance proposal sent to District Collector for approval.

### Fisheries Infrastructure Works Re-allocation of Funds

(Rs. Crores)

S.No	Name of the sub projects	Original allotment	Revised allocation		
1.	Fisheries ongoing Works	120.00	132.30		
2.	Fisheries New infra projects	60.00	78.00		
3.	Study for New projects		10.00		
4.	FIMSUL –II	49.00	49.00		
5	Providing wireless communication facilities	92.30	52.00		
	Total	321.30	321.30		
<b>Note:</b> Concurrence of the World Bank obtained and proposal to obtain Government sanction to be send					



Regional Workshop on Preparation of Taluk Disaster Management Plan at Chennai



### **TNSDMA Service**

TEAP - Tsunami External Aid Project funded by ADB
ETRP - Emergency Tsunami Rehablitation Project (WB)
CDRRP - Coastal Disaster Risk Reduction Project (WB)

..... Continued

# Thanking You