Multi Purpose Cyclone Shelters Addressing Social & Economic Risk - A Quest for Building Coastal Resilient India

National Conference on Coastal Disaster Risk Reduction and Resilience, February 25 2020

Simanchal Patnaik

Mahendra Raja Ram
Paper Presentation Outline

• India’s Vulnerability to Cyclones and State Context (Andhra Pradesh and West Bengal)
  • Multi Purpose Cyclone Shelters (MPCS) and State Assessments
  • Andhra Pradesh and West Bengal: Striving to address socio-economic coastal risks
    • Key Strategic Shifts and Achievements
      • Continued Gaps and Challenges for MPCS and DRR &R
        • Lesson’s Learnt
  • Key take-aways for scaling MPCS and building Coastal Resilience
India’s vulnerable to cyclones
The Coastal Concerns

• **5,700 km of the India’s 7,500 km coastline** is exposed to severe cyclones and hydro-meteorological hazards

• Threaten by sea-level rise, coastal erosion, frequent extreme events, and saltwater encroachment.

• Year 2019, **was hit by 8 cyclones, a record 6 severe cyclonic storms, a record 3 extremely severe cyclonic storms, and 1 to Super Cyclonic Storm, Kyarr.**

• **40% of the total population (estd.) lives within 100 km of the coast** — making the coastal impacts of disasters all the more devastating.

• **Poor economic and social conditions, fragile human settlements, unsafe building practices, and low disaster preparedness** make coastal communities highly vulnerable to climate and disaster risk.
Andhra Pradesh and West Bengal: Similarities and local challenges

- **13 coastal states/UTs** encompassing **84 coastal districts**. Four States (Andhra Pradesh, Odisha, Tamil Nadu and West Bengal) and one UT (Pondicherry) on the East Coast and One State (Gujarat) on the West Coast are more vulnerable.

- Under 12 most cyclone hazard-prone **districts 3 are from Andhra Pradesh** (Nellore and East Godavari, Krishna) and **4 from West Bengal** (South and North 24 Pargana, Medinipur, and Kolkata in West Bengal).

- **Coastal inundation due to storm tides** - Districts of West Bengal are more vulnerable yet, least affected by about 5–6% due to climate change scenario compared to more than 50% and most affected Godavari deltaic region, Andhra Pradesh.
Multi-Purpose Cyclone Shelters: State Assessments

NELLORE DISTRICT
GoI (MHA): Reducing Costal Risk

- **February, 2003:** MHA held a national workshop on, "Developing Strategy for Cyclone Mitigation in the Coastal and Island Regions of India", in the Administrative Training Institute, Kolkata to conceptualized a comprehensive National Cyclone Risk Mitigation Strategy.

- **September, 2006:** MHA formalized "National Cyclone Risk Mitigation Project (NCRMP)" and transferred to NDMA in September, 2006.

- **January, 2011:** NCRMP Phase 1 rolled out in Andhra Pradesh and Odissa with the support of the World Bank

- **July 2015:** NCRMP Phase-II for five years up to March, 2020 covering States of Goa, Gujarat, Karnataka, Kerela, Maharashtra and West Bengal

- **Other Partners:** UNDP, UNICEF, IFRC
MULTI PURPOSE CYCLONE SHELTER ASSESSMENT
ANDHRA PRADESH
Andhra Pradesh: MPCS Assessment by UNICEF

- **Objectives:** (1) Identify gaps between practices in the management & maintenance of MPCS (2) Create awareness about correct management and maintenance MPSC practices (3) Locate Best practices and models for scaling up

- **Methodology:** Ground based study, used both Quantitative and Qualitative incl. Questionnaire (For Community Members & Government Officials), Focused Group Discussions (98 FGDs) Personal Interviews, Survey, Meetings and Field Visits (13 meetings with District/Mandal level Officials)

- **Sample Size:** 636 Community Members including Village heads and SHG Members 177 Officials
  (DROs, MROs, VROs, Panchayati Raj Engineers, APM (SERP), District Health Department Officials, District Education Department Officials, Police, Marine Police, Fire Force, VRAs, RIs, School Principal’s, Anganwadi Teachers, School Teachers, Health workers, Directors of Non-Governmental Organizations)

- **Geographic Area** - 49 MPCS in 47 Cyclone Prone Villages of 19 Mandals situated in 9 Coastal Districts of Andhra Pradesh.
**METHODOLOGY & Research Tools**

- Hazard analysis of nine coastal districts
- Questionnaire (For Community Members & Government Officials)
- Focused Group Discussions (98 FGDs)
- Personal Interviews
- Survey
- Field Visits (13 Meetings with SHG members and District Officials)

**TARGET GROUPS AND SAMPLE SIZE**

- 828 Community Members including Village heads, MPCS committee members and SHG Members
- 160 Officials (VRO’S, VRA’S, School Principal’s, APM’S, AWW Teachers)

---

**Target Group of Study**

- Community: 828, 84%
- Officials: 160, 16%

**Graph:**
- 636 Community Participated in Assessment
- 177 Officials Participated in Assessment
- 09 Districts Covered
- 49 Multi-Purpose Cyclone Shelters Yelled
- 103 FGDs/Meetings Conducted
West Bengal: MPCS Assessment For Cyclone Bulbul by UNICEF

**Children & Community Participation in Assessment**

- Child Friendly tools and exercises for qualitative data collection such as experience sharing through collective narration, art and painting
- Upholding the humanitarian principle of “Do No Harm”
- FGD with Adult members
Snapshot of Cyclone “Bulbul” in West Bengal

- 3.5 million people affected
- In 9 Districts
- 3 Districts were severely affected (S24P, N24P & E. Medinipur)
- A loss of around 23,811 Crore
- 517,535 Houses damaged
- 1.8 lac people evacuated
Snapshot of Clone “AMPHAN” in West Bengal

1,36,00,000 Population Affected in 10 districts including Kolkata and the 3 coastal districts

87 human lives lost and 10,50,000 houses damaged

5136 Relief Camps and 1500 Group Kitchens to help evacuate 618000 persons

Total confirmed COVID 19 cases in WB as on 25th May 2020 is 3667 with a death toll of 272. On 24th May the State has faced the largest hike of 208 cases with 52 cases in Kolkata and 48 in Howrah.

Govt, Preparedness:
- 250 multi-purpose cyclone shelters plus 500 schools for evaluation

UNICEF preparedness:
- Inter Agency Groups at state and district level.

Damage Report:

<table>
<thead>
<tr>
<th>Sector</th>
<th>Extent of assessed damage so far</th>
<th>Quantum of Damages (INR Crores)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dwelling Houses</td>
<td>28,560</td>
<td>28,560</td>
</tr>
<tr>
<td>Agriculture</td>
<td>17 lakh hectares, agriculture land cropped - Boro paddy/Moong/Til/oil /Groundnut/ sugarcane/maintenance crops/cotton</td>
<td>15,860</td>
</tr>
<tr>
<td>Horticulture</td>
<td>Area - 250556.17 Ha Betel vine, Litchi, Mango etc</td>
<td>6,581</td>
</tr>
<tr>
<td>Fisheries</td>
<td>Bots - 8007, Huts 1.48 Lakh</td>
<td>2,000</td>
</tr>
<tr>
<td>WCD</td>
<td>Animals lost - 21,21 lbs</td>
<td>452</td>
</tr>
<tr>
<td>Drinking Water</td>
<td>Piped Water Schemes affected 1192</td>
<td>2,090</td>
</tr>
<tr>
<td>Roads including rural roads and culverts/bridges</td>
<td>Roads - 2366.22 km, Bridge &amp; Culverts - 355, Rural Road - 1009.17 km</td>
<td>2,277</td>
</tr>
<tr>
<td>Irrigation canals / Ponds</td>
<td>Embankments - 344.78 km, Sea Dikes - 3.6 km</td>
<td>2,944</td>
</tr>
<tr>
<td>Power</td>
<td>Power Sub Stations Damaged: 273 Poles - 4,49,374</td>
<td>3,230</td>
</tr>
<tr>
<td>Forest</td>
<td>Forest area affected 1.58 lakh hectares</td>
<td>1,033</td>
</tr>
<tr>
<td>Education infrastructure</td>
<td>14,640 schools, 301 colleges</td>
<td>793</td>
</tr>
<tr>
<td>Health infrastructure</td>
<td>SNC-SHC, BHC/RH-165, Sub Centre-5142, SDH/VGH-37, DD-24</td>
<td>1,270</td>
</tr>
<tr>
<td>Anganwadi infrastructure</td>
<td>ICDS Centre damaged - 12678</td>
<td>342</td>
</tr>
<tr>
<td>Urban infrastructure</td>
<td>Municipal Roads, Street Lighting, Underground Sewerage system, storm, Water drainage, Water supply schemes, roads etc.</td>
<td>6,750</td>
</tr>
<tr>
<td>Industries including MSME</td>
<td>Industrial ware houses/raw material / industrial infrastructure/sheds</td>
<td>26,790</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>Transport, Fire &amp; Emergency Infrastructure, Godowns, Housing, Correctional Homes, BCW etc.</td>
<td>1,540</td>
</tr>
</tbody>
</table>

TOTAL LOSS - 1,02,442
Cyclone “AMPHAN” – West Bangal
State Government Response-AMPHAN

• CM-West Bengal announced a compensation package of Rs 250,000 for those who lost their lives.
• Prime Minister has conducted aerial survey along with CM and Governor of the State & PM announced 1000 crore allocation from his Relief Funds.
• 36 National Disaster Response Force (NDRF) teams are deployed across all six severely affected districts, including Kolkata.
• Indian Army support has been called for.
• Government of West Bengal mobilizes maximum strength in unified command mode on 24×7 basis for immediate restoration of essential infrastructure.
• Government of Odisha deployed a team of 500 persons from the Odisha Disaster Rapid Action Force (ODRAF) and the Odisha Fire Service to assist local authorities with clearing roads, removal of uprooted trees etc.
• State Emergency Operation Center (EOC) at Disaster Management & Civil Defense Department, at Nabanna was the nerve center.
West Bengal: Multi-Sector-JRNA for Cyclone AMPHAN + COVID-19 by State IAG

- Water Sanitation & Hygiene
- Food Security, Nutrition & Livelihood
- Shelter
- Health
- Education
- Child Protection
- Environmental Loss
West Bengal: Multi-Sector-JRNA for Cyclone AMPHAN + COVID-19 by State IAG

Loss of vegetables and other standing crops due to AMPHAN.

Inside a relief shelter cum school for fisher communities.

Loss of shelter (fisher communities), Jumput, East Medinipur.

Due to inundation and loss of shelter, affected communities compelled to live in tents amid COVID-19 pandemic, Silkini village, Bhabanipur I, Hashnabad block, North 24 Parganas.

Fisher communities of Jumput, East Medinipur are now facing severe financial crisis due to COVID-19 and AMPHAN.
West Bengal: Multi-Sector-JRNA for Cyclone AMPHAN + COVID-19 by State IAG
MPCS Andhra Pradesh and West Bengal Assessments: Striving to address reduce socio-economic coastal risks
CYCLONE SHELTER MANAGEMENT HIERARCHY

- National Cyclone Risk Mitigation Project (NCRMP)
- Revenue (DM) Department, GoAP
- Society for Elimination of Rural Poverty (SERP)
- Self Help Groups (SHGs)
- Village Organization (VO)
Andhra Pradesh: Key Findings

Participation in capacity building programmes
(Out of 636 community Survey)

- Early warning trainings: 645
- DRR Workshops: 627
- CBDRR: 656
- Community drills: 628
- Firstaid Trainings: 603
- Search and Rescue programmes: 600

Availability of active task forces/rescue teams in the village
(Out of 636 community Survey)

- Excellent: 54
- Very Good: 33
- Good: 17
- Fair: 11
- Poor: 62

Current condition of the MPCs
(Out of 177 official Survey)

- Yes: 91
- No: 86
COMMUNITY means of transport to MPCS

- By Motorbike: 36
- By Cycle: 40
- By foot: 560

STATUS OF CORPUS FUND

- VO's know about fund and utilizing: 14
- VO's know about fund and not utilizing: 32
- VO's don't know about the fund: 3

AVAILABILITY OF ELECTIVITY AT MPCS

- With legal connection: 21
- Without legal connection: 8
- No connection: 20

MPCS with regular maintenance activities

- Yes: 46
- No: 3
CYCLONE SHELTER WITH DRINKING WATER PROBLEM

AVAILABILITY OF EQUIPMENTS - EMERGENCY KITS, LIFE JACKETS, FIRST AID KITS

MPCS BUILDING IS RESILIENT TO

CONDITION OF TOILETS

- Flood
- Earth Quake
- Fire
- Cyclone
- Thunderstorm
- Storm Surge

Yes  No

47  2%

0  98%

5  44

Good  Bad

No  Available
LACK OF PROPER SANITATION AND HYGIENIC CONDITIONS  
(Out of 177 official Survey)  

SPECIAL ABLED FRIENDLY MPCS CONSTRUCTION  
(Out of 49 MPCS)  

ELECTRICITY REPAIRS REQUIRED  

AVAILABILITY OF KITCHEN UTENSILS  

OFFICIALS HAVING EXPERIENCE IN EARLY WARNING DISSEMINATION TO COMMUNITY  

OFFICIALS HAVING KNOWLEDGE ABOUT VILLAGE DISASTER MANAGEMENT PLAN  

Lack of proper sanitation facility  
Availability of proper sanitation facility  

Yes  No  

Yes  No  

Yes  No  

Yes  No  

Yes  No
▪ Few cyclone shelters were regularly maintained and were properly managed.

▪ Some shelters were used as schools and health care centres. These shelters were properly managed and maintained by the respective facilities.

▪ Some shelters were also being used as Public Library, Anganwadi Centers and for conducting community functions, etc.

▪ Village organizations and members in Srikakulam district were aware of VDMP
West Bengal (Bulbul Cyclone): Key Findings

Shelter with strong structure was appreciated by the communities but they were quite dissatisfied with the available services.

1. **Warnings were not headed unanimously** given that cyclones are recurrent and communities did not feel threatened by them. There was widespread lack of knowledge of understanding of early warning systems due to which limited or no action was taken on the day of the cyclone.

2. **Communities were unprepared** for the scale of Bulbul, and resulted in chaos as well as in sense of fear in losing their loved ones, assets and livelihoods.

3. **Access to shelter was a challenge and their management was extremely poor.** Shelters were flooded with water, crowded, men and women were kept in the same place and there was no electricity.

4. **Limited provision of services especially food, drinking water, hygiene, sanitation and health services.** Safety and security of the adolescents and young-adults was a challenge.
Key Strategic Shifts and Achievements

- **Infrastructure-based to Community-based Cyclone Shelter Management**
- **Inclusion of vulnerable groups (Women) and child sensitivity** through capacity strengthening, early warning and risk mitigation for enhanced ownership and strengthening of disaster preparedness at local level. E.g. Successfully transferred management of the shelters to Village organizations of SHGs.
- **Institutionalization of community based Cyclone Shelter management** through Government orders, Mahila Sadhikara Samstha guidelines.
- **Provision of integrated services** covering health, nutrition, sanitation, education and livelihood round the year; to fast-track response, recovery and improved linkages with resilience.
MPCS Andhra Pradesh and West Bengal Assessments:

Lessons for building coastal resilience
MPCS: Continued Gaps and Challenges

• Shelters do not reach all vulnerable groups in the community.
• Inclusive and community based-management of shelters is largely a state specific initiative; and is yet to be up-scaled under NCRMMP Phase-II
• Child friendly shelters with Child Protection in Emergencies are still not widely accepted.
• Post cyclone shelter management services especially, hygiene and sanitation (including MHS); proper disposal of debris remains a challenge
• Community and financial Accountability is not clearly defined
Andhra Pradesh and West Bengal MPCS: Building Coastal Resilience

**Short-term:**
- Proper implementation of the guidelines provided under the Government Orders
- Creating and publishing a shelter management manual and handbook in local language for better management of shelters.
- Educating administrators/VOs regarding existing Financial guidelines for better management of shelters.
- Promoting intensive use of cyclone shelters for various trainings and mock exercises.
- Promoting the usage of cyclone shelter for organising community services such as tuitions, health centers, blood donation camps, public libraries etc.

**Long-term:**
- Training of Shelter Management Committee under CBDRM project for management of MPCS
- Promoting the concept of Community Ownership for the management and maintenance of shelters.
- Strengthening the administrative and financial capacities of the village organization.
- Plans for transforming MPCS into good community based business models.
MPCS: Key take-aways

- Community Based Management of MPCS with periodic drills for strengthened DRR
- Improved coordination between line departments to use MPCS for integrated services
- Improved Accountability
- Child sensitive and inclusion of vulnerable groups (women) in MPCS management and maintenance for improved accountability
- Linkages with UDMP, School Safety and VDMP for enhanced resilience

Building Coastal DRR and Resilience

- Strengthened DRR
- Integrated services
- Improved Accountability
- Enhanced Resilience
Cyclone & Flood Mock Exercises in all 09 coastal districts 2017
(15 line departments, NDRF, SDRF and defense forces participated)

Cyclone & Flood Mock Exercises in all 09 coastal districts 2018
(17 line departments, NDRF, SDRF and defense forces participated)

Multi state Mega Mock Exercise on Tsunami 2017
(9 coastal Districts Participated)

IOWave Tsunami Mock Exercise 2018
(9 coastal Districts will participate)

Cyclone mock exercises at 05 vulnerable districts - 2019
(15 line departments, NDRF, SDRF and defense forces participated)
• 25 Mock exercises including one multi state Mock exercise and one international mock exercise.
• All mock exercises were organized with one day table tope exercise and district and state level briefing after the exercise.
SHELTER BASED CAPACITY BUILDING ON DISASTER PREPAREDNESS

• A total of 12,542 members were trained in Search & rescue (6463 members) and First Aid: (6,079 members)
• Composition of teams :- First Aid Team (12-15 members aged between 18-35 years), Search & Rescue Team (15-25 members aged between 18-35 years)

STRENGTHENING OF WOMEN SHG LEADERS FROM COASTAL DISTRICTS

• 900 women SHG leaders were trained in DRR, with the intent of strengthening last mile connectivity and Community response mechanism towards early warnings.
• Training Sessions on Strengthening of Multi Purpose Cyclone Shelter Maintenance and Management.

Training of Anganwadi workers on Child Centric Response/Relief practices and first aid
• 424 Anganwadi workers trained from 09 coastal districts in AP

Training on community level response and relief to cyclones
• 409 community leaders trained from 09 coastal districts
Andhra Pradesh State Disaster Management Authority

Line - Department wise Checklist for Cyclone Management

Based on Standard Operation Procedure of Cyclone Management

State Emergency Operation Center
Highlights of 2018-20 CCDRR Programmers to build resilience in West Bengal

School Safety & Security

Risk Informed GPDP

Child Risk & Impact Assessment

Capacity Building on NiE

Capacity Building on CPIE

CCI Safety & Security
Thank You