



**NATIONAL CYCLONE RISK MITIGATION PROJECT  
NATIONAL DISASTER MANAGEMENT AUTHORITY**

Ministry of Home Affairs, Government of India



# BENEFIT MONITORING EVALUATION

## Mid-term Study – Report



**GFK MODE PVT.LTD.**

First floor - Karpaga Vilas, No.21, | First main road, CIT Colony,

Mylapore, | Chennai - 600004 | India | +91 044 4353 5026 | [www.gfk.com](http://www.gfk.com)

<b>CONTENTS</b>		<b>Pg. No.</b>
<i>List of tables</i>		4
<i>List of figures</i>		6
<i>Abbreviations</i>		7
<b>Chapter I</b>		8
<b>Background</b>		8
1.1	: Background	8
1.2	: Project Objectives	8
1.3	: Project Components	8
1.4	: Benefit monitoring and evaluation survey	9
1.5	: Methods/ Design	10
1.6	: Key information components	11
1.7	: Key target respondents	11
1.8	: Sample design	11
1.9	: Data collection	12
1.9.1	: Data Management	13
1.10	: Pilot study	13
<b>Chapter II</b>		17
<b>Socio Demographic Information</b>		17
2.1	: Age	17
2.2	: Gender	18
2.3	: Marital Status	18
2.4	: Religion	19
2.5	: Ownership of House	19
2.5.1	: Type of House	20
2.6	: Agricultural Land Ownership	21
2.7	: Livestock	22
2.8	: Occupation	22
2.9	: Type of Land working on	23
2.10	: Household Income	24
2.11	: Family Size Details	24
2.11.1	: Number of Children in the household	25
2.11.2	: Total members in the family	25
2.11.3	: Total disabled members in the family	26
2.11.4	: Total working members in the family	26

<b>Chapter III</b>	<b>28</b>
<b>Early Warning and Dissemination System (EWDS)</b>	<b>28</b>
3.1 : Aware of comprehensive Early Warning dissemination Systems (EWDS)	28
3.2 : Know about the place where Early Warning System is installed	28
3.3 : Ever received early warning for disasters in village	29
3.4 : Time period of receiving the warning	29
<b>Chapter IV</b>	<b>31</b>
<b>Multi-Purpose Cyclone Shelter (MPCS)</b>	<b>31</b>
4.1 : MPCS in village/ locality [From March 2014]	31
4.2 : MPCS in village/ locality [From March 2014] under which Scheme	32
4.3 : MPCS in village/ locality [before June 2010]	32
4.4 : Capacity for shelter to animals in MPCS	33
4.5 : MPCS provided shelter to animals before June 2010	33
4.6 : Distance between MPCS and home	34
4.7 : Capacity of MPCS	34
4.7.1 : MPCS can fully accommodate the vulnerable population of village at cyclone	35
4.8 : Infrastructural Facilities within MPCS	35
4.9 : Cyclone Shelter Maintenance and Management Committee constituted and functional	36
4.10 : Maintenance of MPCS	37
<b>Chapter V</b>	<b>38</b>
<b>Roads, Bridges and Saline embankments</b>	<b>38</b>
5.1 : Village connected with road	<b>38</b>
5.2 : Village connected with road before June 2010	39
5.3 : Village connected through bridge	39
5.4 : Need for bridge to be constructed to connect to the village as of June 2014	40
5.5 : Village connected through bridge before 2010	40
5.6 : MPCS in village connected with road	40
5.7 : Need for road to connect to the MPCS	41
5.8 : MPCS in village connected with road before June 2010	41
5.9 : Saline embankment in village	42
5.9.1 : Coverage of population protected by Saline Embankment	42
5.10 : Saline embankment in village	43
<b>Chapter VI</b>	<b>44</b>
<b>Capacity Building</b>	<b>44</b>
6.1 : Training and Capacity Building of household members in EWDS and Disaster Management skills	44

6.2	: Training and Capacity Building of household members in Disaster Management Skills	45
6.3	: Trained in Early Warning Dissemination System for cyclone	46
6.4	: Trained in management of different type of disaster	46
6.5	: Any other type of work to be carried out under NCRMP	47
6.6	: Participation in any mock drill for evacuation/ disaster management	47
<b>Chapter VII</b>		<b>48</b>
<b>Evacuation during cyclones</b>		<b>48</b>
7.1	: Cyclone Phailin, 12 <sup>th</sup> October 2013	48
7.1.1	: Received warning of Cyclone Phailin in time and how much in advance	48
7.1.2	: Evacuation during Cyclone Phailin	49
7.1.3	: Evacuation during Cyclone Phailin, place evacuated to, Scheme under which shelter constructed and reason for evacuation	49
7.1.4	: Reasons for not evacuating during Cyclone Phailin	50
7.1.5	: Road/ bridge constructed under NCRMP used during Cyclone Phailin	51
7.1.6	: Saline embankment constructed under NCRMP useful during Cyclone Phailin	51
7.1.7	: Duration to return home post Cyclone Phailin	52
7.1.8	: Warning message specific on evacuation	52
7.1.9	: Experience of staying in MPCS/ other place during Cyclone Phailin	53
7.2	: Cyclone Helen, 22 <sup>nd</sup> November 2013	54
7.2.1	: Received warning of Cyclone Helen in time and how much in advance	54
7.2.2	: Evacuation during Cyclone Helen	55
7.2.3	: Evacuation during Cyclone Helen, place evacuated to, Scheme under which shelter constructed and reason for evacuation	55
7.2.4	: Reasons for not evacuating during Cyclone Helen	56
7.2.5	: Road/ bridge constructed under NCRMP used during Cyclone Helen	57
7.2.5.1	: Saline embankment constructed under NCRMP useful during Cyclone Helen	57
7.3	: Cyclone Lehar, 28 <sup>th</sup> November 2013	58
7.3.1	: Received warning of Cyclone Lehar in time and how much in advance	58
7.3.2	: Evacuation during Cyclone Lehar	59
7.3.3	: Evacuation during Cyclone Lehar, place evacuated to, Scheme under which shelter constructed and reason for evacuation	59
8.1	: Project Development objective Indicators – Odisha	61
8.2	: Project Development objective Indicators – Andhra Pradesh	62
8.3	: Intermediate Results Indicators - NCRMP	63

List of Tables		Pg. No.
<b>Table-1</b>	Results Framework	10
<b>Table-2</b>	Sample size	12
<b>Table-3</b>	Sample size distribution of pilot study	13
<b>Table-4</b>	List of villages covered in Andhra Pradesh	14
<b>Table 5</b>	List of villages covered in Odisha	15
<b>Table 6</b>	Age of the respondent	17
<b>Table-7</b>	Marital Status of the respondents	18
<b>Table-8</b>	Ownership of agricultural land among respondents	21
<b>Table-9</b>	Ownership of livestock among respondents	22
<b>Table-10</b>	Main occupation of respondents	23
<b>Table-11</b>	Type of land working on	23
<b>Table-12</b>	Annual Household Income	24
<b>Table-13</b>	Number of Children	25
<b>Table-14</b>	Total members in the family	25
<b>Table-15</b>	Disabled members in a family	26
<b>Table-16</b>	Working members in a family	26
<b>Table-17</b>	Know about the place where Early Warning System is installed	28
<b>Table-18</b>	Time period of receiving the warning	29
<b>Table-19</b>	MPCS in village/ locality [since March 2014]	31
<b>Table-20</b>	MPCS in village/ locality [From March 2014] under which Scheme	32
<b>Table-21</b>	MPCS in village/ locality [before June 2010]	32
<b>Table-22</b>	Capacity for shelter to animals in MPCS	33
<b>Table-23</b>	MPCS provided shelter to animals before June 2010	33
<b>Table-24</b>	Distance between MPCS and home	34
<b>Table-25</b>	Capacity of MPCS	34
<b>Table-26</b>	Infrastructural Facilities within MPCS	35
<b>Table-27</b>	Cyclone Shelter Maintenance and Management Committee constituted and functional	36
<b>Table-28</b>	Maintenance of MPCS	37

<b>Table-29</b>	Need for bridge to be constructed to connect to the village as of June 2014	40
<b>Table-30</b>	Need for road to connect to the MPCs	41
<b>Table-31</b>	Coverage of population protected by Saline Embankment	42
<b>Table-32</b>	Training and Capacity Building of household members in EWDS	44
<b>Table-33</b>	Training and Capacity Building of household members in Disaster Management Skills	45
<b>Table-34</b>	Trained in management of different type of disaster	46
<b>Table-35</b>	Any other type of work to be carried out under NCRMP	47
<b>Table-36</b>	Participation in any mock drill for evacuation/ disaster management	47
<b>Table-37</b>	Received warning of Cyclone Phailin in time and how much in advance	48
<b>Table-38</b>	Evacuation during Cyclone Phailin, place evacuated to, Scheme under which shelter constructed and reason for evacuation	49
<b>Table-39</b>	Reasons for not evacuating during Cyclone Phailin	50
<b>Table-40</b>	Road/ bridge constructed under NCRMP used during Cyclone Phailin	51
<b>Table-41</b>	Saline embankment constructed under NCRMP useful during Cyclone Phailin	51
<b>Table-42</b>	Duration to return home post Cyclone Phailin	52
<b>Table-43</b>	Warning message specific on evacuation	52
<b>Table-44</b>	Received warning of Cyclone Helen in time and how much in advance	54
<b>Table-45</b>	Evacuation during Cyclone Helen, place evacuated to, Scheme under which shelter constructed and reason for evacuation	55
<b>Table-46</b>	Reasons for not evacuating during Cyclone Helen	56
<b>Table-47</b>	Road/ bridge constructed under NCRMP used during Cyclone Helen	57
<b>Table-48</b>	Saline embankment constructed under NCRMP useful during Cyclone Helen	58
<b>Table-49</b>	Received warning of Cyclone Lehar in time and how much in advance	58
<b>Table-50:</b>	Evacuation during Cyclone Lehar, place evacuated to, Scheme under which shelter constructed and reason for evacuation	59
<b>Table- 51</b>	Project Development objective Indicators – Odisha	61
<b>Table - 52</b>	Project Development objective Indicators – Andhra Pradesh	62
<b>Table -53</b>	Intermediate Results Indicators - NCRMP	63

List of Figures		Pg. No.
Figure -1	Gender of respondents	18
Figure- 2	Religion of head of HH	19
Figure -3	Ownership of house of respondents	20
Figure -4	Type of house of respondents	20
Figure-5	Aware of comprehensive Early Warning dissemination Systems (EWDS)	28
Figure- 6	Ever received early warning for disasters in village	29
Figure-7	MPCS can fully accommodate the vulnerable population of village at cyclone	35
Figure-8	Village connected with road	38
Figure-9	Village connected with road before June 2010	39
Figure-10	Village connected through bridge	39
Figure-11	Village connected through bridge before 2010	40
Figure-12	MPCS in village connected with road	40
Figure-13	MPCS in village connected with road before June 2010	41
Figure-14	Saline embankment in village	42
Figure-15	Saline embankment in village before June 2010	43
Figure- 16	Trained in Early Warning Dissemination System for cyclone	46
Figure-17	Evacuation during Cyclone Phailin	49
Figure-18	Evacuation during Cyclone Helen	55
Figure-19	Evacuation during Cyclone Lehar	59

## ABBREVIATIONS

<b>AP</b>	:	Andhra Pradesh
<b>BME</b>	:	Benefit Monitoring and Evaluation
<b>CBO</b>	:	Community Based Organization
<b>CSMMC</b>	:	Cyclone Shelter Maintenance and Management Committee
<b>DDMA</b>	:	District Disaster Management Authority
<b>EWDS</b>	:	Early warning Dissemination System
<b>EWS</b>	:	Early warning system
<b>HH</b>	:	Household
<b>MPCS</b>	:	Multi- Purpose cyclone shelter
<b>NCRMP</b>	:	National Cyclone Risk Mitigation Project
<b>NDMA</b>	:	National Disaster Management Authority
<b>NGO</b>	:	Non- Government Organization
<b>NIDM</b>	:	National Institute of Disaster Management
<b>PIU</b>	:	Project Implementation Unit
<b>PMU</b>	:	Project Management Unit
<b>V.R.O</b>	:	Village revenue officer

## CHAPTER I:

### Benefit Monitoring & Evaluation Study 2013

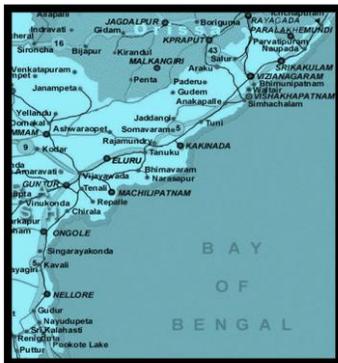
#### Salient features

Measure reduced vulnerability of coastal communities to cyclone and climate related hazards

Mid-term and End line values to be compared with Baseline estimates

To be conducted using mixed method research design through quantitative survey as well as qualitative assessment among target respondents

Study areas include coastal Andhra Pradesh and Odisha



### 1.1. BACKGROUND

The Government of India initiated the National Cyclone Risk Mitigation Project (NCRMP 1) with a view to address the cyclone risks in the country, with World Bank Assistance. The main aim and objective of the project is to strengthen the structural and non-structural cyclone mitigation efforts and reduce cyclone risks and vulnerability in the coastal districts prone to cyclones. NCRMP will assist all 13 States/UTs which are prone to cyclones. Government has approved the implementation of Phase- I of NCRMP for Andhra Pradesh and Odisha.

National Disaster Management Authority (NDMA) in coordination with the Governments of Andhra Pradesh and Odisha and the National Institute of Disaster Management (NIDM) is implementing Phase I of the program

### 1.2. PROJECT OBJECTIVES

The key objective of the project is to reduce the vulnerability of coast communities in Andhra Pradesh and Orissa to cyclone and other hydro meteorological hazards.

### 1.3. PROJECT COMPONENTS

The Project has the following four components:

- I. **Early warning Dissemination System (EWDS)** – Last Mile Connectivity for the dissemination of cyclone warnings and advisories from district/ sub-district level to communities and vice versa.
- II. Construction of physical infrastructure for cyclone **risk mitigation** like cyclone shelters, saline embankments, roads and bridges.
- III. **Technical assistance** for capacity building on hazard risk management including the preparation of composite risk atlas, strategy for long term capacity building and damage and loss assessment.
- IV. **Project Management** and Monitoring applicable to all implementing agencies.



The components of NCRMP are elaborated below:

### **I. Early Warning and Dissemination System (EWDS) and capacity building of coastal communities**

This component helps in reducing the vulnerability of coastal communities by tackling the existing gap in dissemination of warning to communities. This is done in AP and Odisha through installation and operation of early warning communication and dissemination systems by allowing different levels to send communication directly to villages through multiple modes of communication through satellite phones and radio based wireless communication. This envisages strengthening the capacity of coastal communities in both states to maintain and operate the EWDS and carry out emergency mobilization (i) in operating, maintaining and regular use of EWDS equipment and (ii) of communities in disaster preparedness and response by preparing disaster management plans.

### **II. Cyclone Risk Mitigation Infrastructure**

The purpose of this component is to improve access to emergency shelters, evacuation and protection against cyclones and other hydro-meteorological hazards in high risk areas in AP and Odisha through investment in MPCSS upgrading of existing roads helping in connecting habitations and shelters, construction of bridges for evacuation, repair and up-gradation of existing embankments.

### **III. Technical Assistance for Cyclone Hazard Risk Mitigation, Capacity Building & Knowledge Creation**

This component envisages assisting 13 vulnerable coastal states and UTs to improve their understanding of natural disaster risks and vulnerabilities, and strengthen their institutional capacity to address such risks and vulnerabilities.

### **IV. Project Management and Implementation Support**

This component provides for support for Project management and implementation by financing incremental operating costs for PMU, PIUs, Nodal units in line departments and NIDM.

## **1.4. BENEFIT MONITORING AND EVALUATION SURVEY**

The Benefit Monitoring and Evaluation Study is based on the Key Programme Indicators developed for the project to measure project outcomes/results. The objectives of the assignment, is to undertake Benefit Monitoring and Evaluation (BME) at mid-term and end of the project compared to the baseline for monitoring and evaluating the outcomes/results of the project interventions at Odisha and Andhra Pradesh.

The study is to be carried out in two well defined stages.

- Stage I setup/update the baseline data, conducted midterm evaluation, and

- Stage II will be the end of the project evaluation.

A broad framework for assessing the results of the Project is given in Table-1.

*Table-1: Results Framework*

Outcome Level:	Key Performance Indicator(s):
Reduced vulnerability of coastal communities in participating states to cyclone and climate related hazards	<ul style="list-style-type: none"> <li>• Proportion (%) of targeted coastal population covered by the Early Warning Dissemination System and the efficacy of the system in all emergent situations</li> <li>• Proportion (%) of people having access to emergency shelter and their ability to maintain the structures including efficient use of the structures during normal times</li> <li>• Number of people and hectares of land protected by strengthened/improved embankments</li> <li>• Increased number of people connected through road communication network.</li> <li>• Increased awareness about warnings and emergency response</li> </ul>
Capacity built towards managing disasters	<ul style="list-style-type: none"> <li>• % of targeted communities / people trained in use of early warning and evacuation procedures</li> <li>• Number of government officials trained on specific disaster management skills</li> <li>• Preparation of long-term training and capacity building strategy and post disaster Damage and Loss Assessments</li> <li>• Completion of risk assessment studies and the use of such studies for disaster risk reduction</li> </ul>

## 1.5. METHODS/ DESIGN

The Benefit Monitoring and Evaluation Study was conducted by the consultant – GfK Mode for PMU, NCRMP, NDMA for the states of AP and Odisha. The BME was conducted at the **mid-term** and will also be conducted at the end of the project compared to the baseline for monitoring and evaluating the outcomes/ results of the project interventions. The mid-term evaluation was done through measurement of several key performance indicators across the broad themes of reduced vulnerability of coastal communities in participating states to respond effectively to cyclones and hazards and determine capacity built among target communities in managing disasters.

The study was conducted in 9 coastal districts of AP and 6 coastal districts of Odisha that are prone to cyclones and was conducted among households living in the coastal stretches up to 10 kms. from the sea. Apart from obtaining data and information at the household level, it obtained information at

the institutional level through interactions with project implementation functionaries at various levels in the two states.

The final households selected for the study in the mid-term will be the same that will be covered in the end line and the selection of final households would be done through random sampling from the overall sampling frame.

The survey covered 5% of the total villages with representative sample of about 20 households per villages. This was estimated to be approximately 1000 households in each of the 2 states at mid-term and the same households at final evaluation stage.

### 1.6. KEY INFORMATION COMPONENTS

- Socio Demographic Information
- Early Warning Dissemination Systems
- Multi-Purpose Cyclone Shelters
- Roads, Bridges and Saline Embankments
- Capacity Building
- Evacuation during recent cyclones
  - Cyclone Phailin, 12<sup>th</sup>October 2013
  - Cyclone Helen, 22<sup>nd</sup> November 2013
  - Cyclone Lehar, 28<sup>th</sup>November 2013

### 1.7. KEY TARGET RESPONDENTS

The key target respondents for the BME Study is the beneficiary communities residing in coastal villages of Odisha and Andhra Pradesh which are prone to cyclones. The unit of study was the households and the primary respondent for the study was the head of the households.

### 1.8. SAMPLE DESIGN

The sampling area or villages selected for the survey were selected from an area that was geographically up to only 10 km from the sea. Within this, a sub-division was made to measure Outcome 1 in the stretch from the sea up to 5 km and for other outcomes up to 10 km stretch. From the total number of villages, 5 percent of the villages formed the primary sampling unit from which the households were selected. Twenty households from each of the selected villages were selected.

Table-2: Sample size

State	District	No. of Coastal Taluks/ Blocks	<5% of villages up to 10 Km	No. of households per village	Required Sample Size (HHs)
Andhra Pradesh	Nellore	8	50	20	1000
	Prakasam	12			
	Guntur	5			
	Krishna	5			
	West Godavari	2			
	East Godavari	13			
	Vishakapatnam	13			
	Vizianagaram	3			
	Srikakulam	13			
Odisha	Puri	6	50	20	1000
	Balsore	12			
	Kendrapara	3			
	Jagatsinghpur	4			
	Ganjam	5			
	Bhadrak	5			
<b>TOTAL</b>		<b>109</b>	<b>100</b>	<b>20</b>	<b>2000</b>

**50 villages** were selected in each of the study states leading to a sample size of 1000 Interviews in each state for each round and aggregating to over 4000 Interviews across both states for both Mid-term and Final Impact survey among the same households.

## 1.9. DATA COLLECTION

The research instruments – Household Questionnaire, training curriculum, materials, and field manuals were developed by GfK Mode in consultation with PMU, NCRMP, NDMA and translated into Telugu and Oriya version.

The enumerators training manual was given to the field executives and supervisors/ editors for better understanding and easy referencing. The required number of copies of the field manual was prepared and every field team, state executive and field coordinator was given a copy of it. The staff for the data collection included experienced supervisors and investigators from the in-house panel.

A comprehensive study specific training was given to the supervisors, interviewers for a minimum of 1 week in order to create a team environment. Exclusive trainings were held at Vishakhapatnam in Andhra Pradesh and Bhubaneswar in Odisha. The BME team of GfK was the lead trainers with expert guidance and participation of PMU, NCRMP and NDMA representatives. The training was held between 10th June 2014 to 15th June 2014 in Vishakhapatnam and Bhubaneswar.

At the field Back-Checking of data during survey by Supervisor was 20% and Spot Checks during survey was 25% by Manager/Supervisor. The field movement and implementation plan was formulated on a weekly basis for expert monitoring. The data collection was from 3<sup>rd</sup> week of June to 2<sup>nd</sup> week of July.

### 1.9.1. DATA MANAGEMENT

A robust data entry program in CS Pro was developed for the study and the specific analysis plan was designed for BME. The team was responsible for translating the user interface into appropriate local language if needed, adapting the program to reflect any changes from the base schedule, and adding modules for any additional data collection that was unique to the survey.

### 1.10. PILOT STUDY

As part of the Benefit Monitoring Survey, a pilot test of the draft questionnaires was conducted in both the study states of Andhra Pradesh and Odisha.

The sample size coverage for the pilot study was in the following districts and villages:

*Table-3: Sample size distribution of pilot study*

State	District	Village	Sample size [HHs]
<b>Andhra Pradesh</b>	Srikakulam	Runku	20
	Vizianagaram	Puligeddapalem	20
	Vishakapatnam	Gajapatnagar	20
<b>Odisha</b>	Badrak	Artung	20
	Puri	Badatara	20
	Ganjam	Borigan	20
<b>Total</b>	6 districts	6 villages	<b>120</b>

The process was implemented as per the protocol with conducting of interviews in the household. The outcome of the pilot ensured incorporating adequate evaluation specifics required with regard to results framework and the revised schedule was pretested again for enhancement of Data collection procedure. The proceedings were analysed for optimum understanding of the accuracy and validity in data collection and analysis.

Table 4: List of villages covered in Andhra Pradesh

Sl. No.	District	Mandal	Name of the Village
1	Srikakulam	Santabommali	Runku
2			Kollipadu
3			T. Sasanam
4			Marripadu
5			Gangaram
6		Kaviti	Idduvanipalem
7			Manikyauram/Onturu
8		Ranastalam	Komaravanipeta
9			Patnamvanipet
10	Vizianagaram	Pusapatirega	Puligeddapalem
11			Bodduguraiahpeta
12	Vishakapatnam	Payakaraopeta	Gjapatinagaram
13			Gajireddypale
14		Rambilli	Venkayyapalem
15			Kothapatnam
16		Nakkapalli	Patimeeda
17			Jankayyapeta
18		Bheemilli	ChpalaDibbalapalem
19			China Nagamayyapalem
20	East Godavari	Thondangi	Avulamanda
21			Addaripeta
22		Katrenikona	Chirrayanam
23		I. Polavaram	Gogullanka
24			Dasaravanipeta
25	West Godavari	Narsapur	PedaMainavanilanka
26			China Mainavanilanka
27	Krishna	Nagayalanka	Pedakammavaripalem
28			Bhavadevarapalli
29			Elichetladibba
30		Kruthivenu	Interu
31			KruthivenuPallipalem
32	Guntur	Bapatla	Panadurangapuram
33			Stuvaripuram
34			Gajulavaripalem
35		Nizampatnam	Padmativeedi of Nizampatnam
36			AdavulaDeevi- Tummala

37	Prakasham	Ulavapadu	Chakicherla
38			Sriramapattapupalem
39		Chirala	Keerthivaripalem
40			Odarevu
41		S.Konda	Narravaripalem
42			Pakala Main
43	Nellore	Kavali	Pedanattu
44			Tummalapenta
45			ChennayyapalemHarijanawada
46		Kota	SrinivasaSatram
47			Deyyaladibba
48		Alluru	Isakapalli
49			Adinarayanapuram
50			Labbipalem

Table 5: List of villages covered in Odisha

Sl. No.	District	Block	Name of the GP	Name of the Village
1	Balasore	Bhogarai	Rasaipur	Kumbhargadi
2		Bhogarai	Jairampur	Jairampur
3		Bhogarai	Hooguli	Talasari
4		Baliapal	Anladiha	Anladiha
5		Baliapal	Deula	Deula
6		Baliapal	Bolonga	Gobindapur
7		Baliapal	Pratappur	Ikarapal
8		Baliapal	Kundali	Kundali
9		Basta	Sahada	Kainagari
10		Sadar	Kasafala	Alumeda
11		Sadar	Jayadebkasba	JayadebkasbaPahi
12		Sadar	Panchupada	Panchpada
13		Sadar	Padampur	Srikona (B)
14		Remuna	Inchudi	Kalamatiapahi
15		Bahanaga	Kharasahaour	Panchubisa
16		Bahanaga	Bishnupur	Bishnupur
17	Bhadrak	Basudevpur	Adhuan	Adhuan
18		Basudevpur	Artung	Artung
19		Basudevpur	Naugaon	Padhuan (sarapokhari Ad)
20		Chandbali	Panchutikiri	Kaduanasi
21		Chandbali	Panchutikiri	Nachhipur
22		Basudevpur		Sunamuh
23	Kendrapara	Mahakalapada	Ramnagar	Pitapata
24		Mahakalapada	Badihi	Radia
25		Mahakalapada	Badadiha	Bagagahana (Rankim Prasad)

26		Rajnagar		Padnavpur
27		Rajnagar		Pentha
28		Rajnagar		Talapada
29	Jagatsinghpur	Ersama	Ambik	Kankan
30		Erasama		Kalabedi
31		Erasama		Hasrishpur
32		Balikuda	Kusupur	Kusupur
33		Balikuda	Santarapur	Santarapur
34		Balikuda	Manchipur	Manchipur
35		Balikuda	Manchipur	Bandar (Dhanuharbelari)
36	Puri	GOP	Badatara	Badatara
37		GOP	Tarakor	Bangar
38		GOP	Mahalapada	Sarada
39		GOP	Kuampada	Sujanagar
40		Kakatpur	Bangurigan	Chhotipada
41		Kakatpur	Bangurigan	Kania
42		Kakatpur	Jaleswarpada	Jaleswarpada
43		Astarang	Korual	Bantilo
44		Astarang	Sisua	Keutajanga
45		Astarang	Alasahi	Tandahara
46		Astarang	Nagar	Kaliakana
47	Ganjam	Ganjam	Huma	Borigan
48		Ganjam	Palibandha	Niladripur
49		Rangeilunda	Baxipalli	New Baxipalli
50		Chikiti	Katuru	Ramayapatna

## CHAPTER II

### Socio demographic Information



The socio demographic information gathered about the coastal areas covered under Odisha and Andhra Pradesh, presents the profile of the respective districts with regard to socio-economic/demographic/ and religious aspects.

#### 2.1. Age

**Table 6: Age of the respondent**

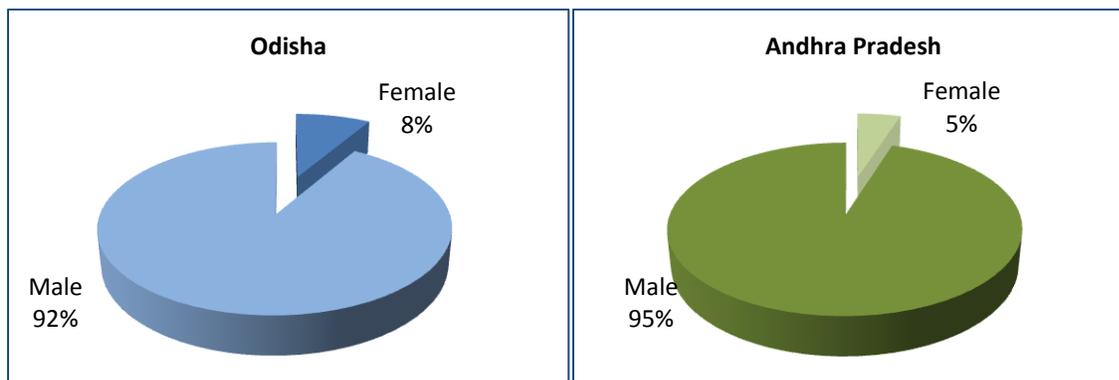
Age Range	Odisha	Andhra Pradesh
	%	%
22 to 34 years	22	26
35 to 44 years	24	31
45 to 54 years	44	39
55 to 64 years	10	4
65 years and above	3	1
<b>Average Age</b>	<b>46</b>	<b>42</b>
<b>Base</b>	<b>1000</b>	<b>1000</b>

The above table presents the age of the head of the household interviewed during this study. It is observed that the average age of respondents is 46 years in Odisha. In Andhra Pradesh, the average age of respondents is 42 years. Further, it is seen that in both the states, majority of the respondents are between 45 and 54 years in Odisha (44%) and AP (39%).

## 2.2. Gender



Figure 1: Gender of respondents



Base: All

According to the figure above, a majority of the respondents were male and only less than 10 percent in both states were female. While 92 percent of respondents in Odisha were male, in Andhra Pradesh 95 percent of the respondents were female.

## 2.3. Marital Status

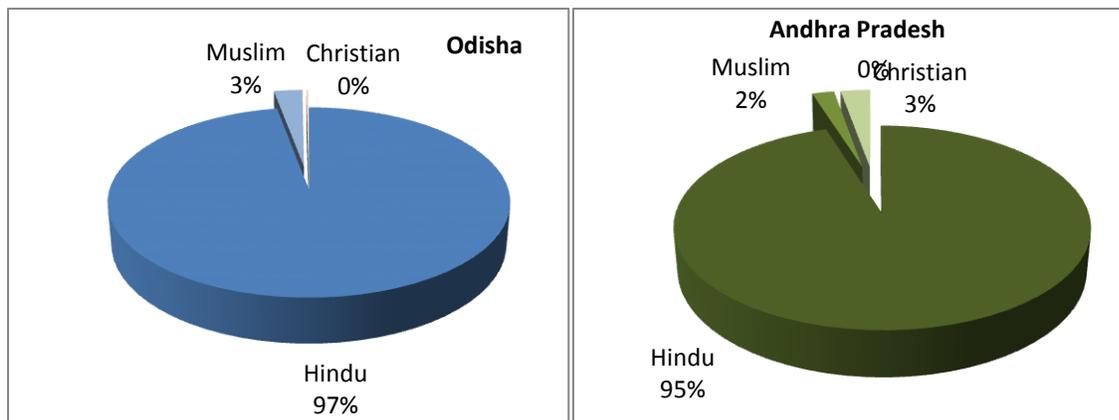
Table 7: Marital Status of the respondents

Marital Status	Odisha	Andhra Pradesh
	%	%
Married	94	97
Unmarried	4	2
Widow	2	1
<b>Base</b>	<b>1000</b>	<b>1000</b>

The marital status of respondents is presented in the table above. It is observed from the above that 9 in 10 of the respondents in both the states are married. In Odisha (94%) and Andhra Pradesh (97%) were married. It is further seen that 4 percent respondents in Odisha and 2 percent respondents in Andhra Pradesh are unmarried and half that percentage in both states are widowed.

## 2.4. Religion

Figure 2: Religion of head of HH



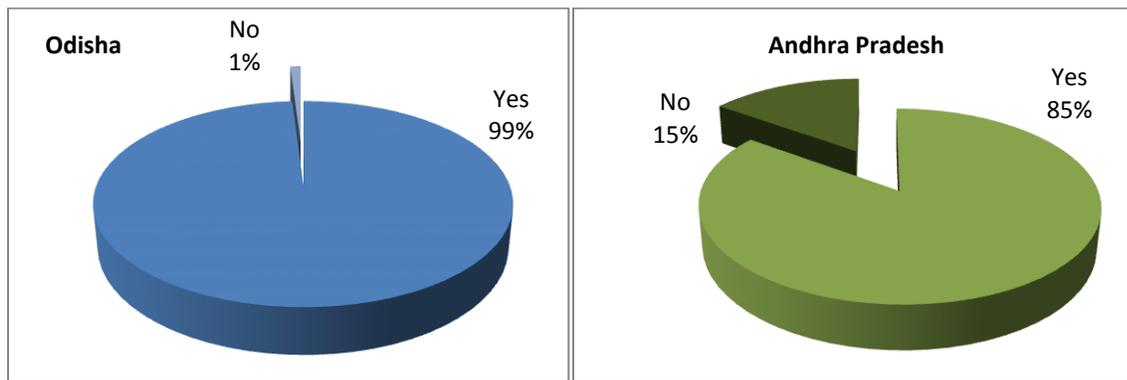
Base: All

The figure above presents the distribution of religion of the head households in the two states. It is observed that majority of the respondents were Hindus, Odisha (97%) and Andhra Pradesh (95%). In Odisha, it was observed that 3 percent respondents followed the Muslim religion. In Andhra Pradesh it is observed that 3 percent belong to the Christian faith and remaining 2 percent were Muslims.

## 2.5. Ownership of house



Figure 3: Ownership of house of respondents



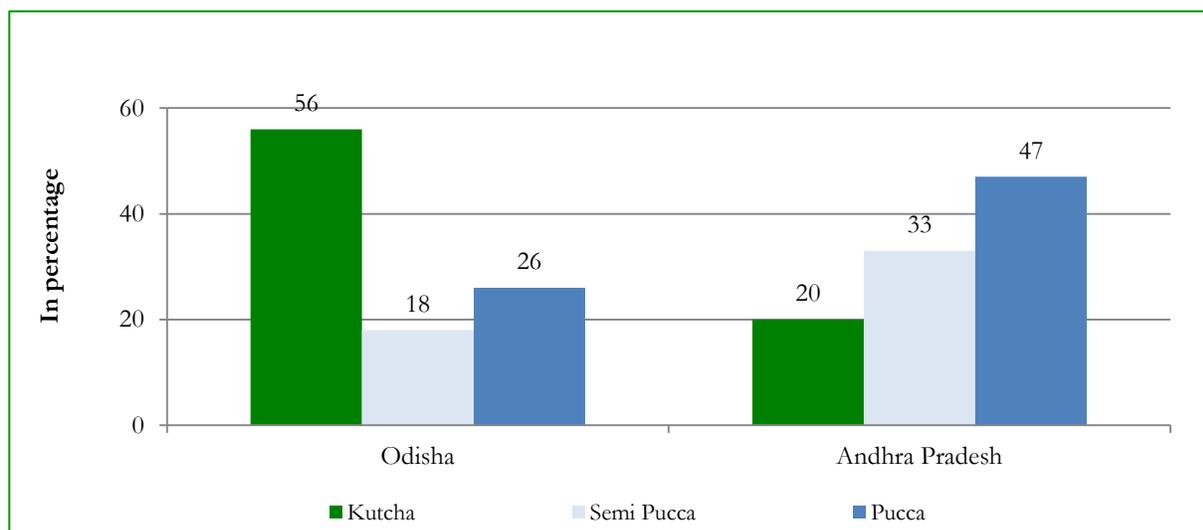
Base: All

According to the figure above, the ownership pattern of the house is described, that is ascertaining if the house they live in is their own. From the figure, it is evident that almost all respondents in Odisha own the house they live in (99%). In Andhra Pradesh a vast majority of the respondents own a house (85%).

### 2.5.1. Type of house



Figure 4: Type of house of respondents



Base: All

The figure above reveals the type of house the respondents lived in. It is observed that marginally over half the respondents in Odisha (56%) live in *Kutchha* houses and around one-fourth (26%) lived in *Pucca* houses. The remaining 18 percent lived in *semi-pucca* houses. In Andhra Pradesh, a majority of the respondents – almost half of them (47%) lived in *Pucca* houses with only one-fifth living in *Kutchha* houses (20%) and the remaining in *Semi-pucca* houses (33%).

## 2.6. Agricultural land ownership



**Table 8: Ownership of agricultural land among respondents**

Land Ownership		Odisha	Andhra Pradesh
		%	%
		%	%
No own land		36	59
Own Land		64	41
Own land	Less Than 1 Acre	0	4
	1- 5 Acre	35	33
	5- 10 Acre	16	1
	More than 10 Acres	13	3

The agricultural land ownership pattern is revealed in the table above. It is seen from the same that around two-thirds of all respondents (64%) in Odisha own land. In Andhra Pradesh less than half of all respondents (41%) own land. It can further be seen that most of the land holdings are small, ranging from 1 to 5 acres. In Odisha 35 percent of all respondents who own land own 1 to 5 acres. In Andhra Pradesh, 33 percent of land owners own 1 to 5 acres of land.

## 2.7. Livestock



**Table 9: Ownership of livestock among respondents**

Livestock Ownership	Odisha		Andhra Pradesh	
	Cattle	Poultry	Cattle	Poultry
	%	%	%	%
Yes	69	18	26	29
No	31	72	74	71
<b>Base</b>	<b>1000</b>	<b>1000</b>	<b>1000</b>	<b>1000</b>

The figure above presents information about the ownership of livestock among the respondents in both the states. It is observed that majority (69%) of the respondents in Odisha owned livestock and 18 per cent owned poultry. In Andhra Pradesh it was observed that only 26 per cent of the respondents owned cattle and a higher percentage (29%) owned poultry.

## 2.8. Occupation



Table 10: Main occupation of respondents

Main Occupation	Odisha	Andhra Pradesh
	%	%
Agriculture/Fishing/Animal Husbandry/ allied activity	45	70
Wage Labourer	40	19
Self-employment	10	8
Services	5	3
<b>Base</b>	<b>1000</b>	<b>1000</b>

The above table presents information on the main occupation of the respondents. It is observed that the main occupation of marginally less than half of all respondents (45%) in Odisha was Agriculture/ Fishing/ Animal Husbandry/ allied activities and a significant number (40%) are wage labourers. While 10 percent of respondents are self-employed, the remaining 5 percent are engaged in services. In Andhra Pradesh more than a third of all respondents (70%) are employed in Agriculture/ Fishing/ Animal Husbandry/ allied activities while a fifth (19%) work as wage labourers with 8 percent self-employed and the remaining 3 percent engages in services.

## 2.9. Type of Land working on:

Table 11: Type of land working on

Type of land	Odisha	Andhra Pradesh
	%	%
Own land	29	31
Family land	1	1
Rented land	11	10
Someone else's land	1	10
Not working on land related activities	58	48
<b>Base</b>	<b>1000</b>	<b>1000</b>

The table above provides an insight into the nature of land worked on by the respondents in both the study states. It is observed from the above that around 30 percent of respondents in Odisha worked on their own land and 11 percent worked on rented land. More than half the proportion of

respondents (58%) was not working on land related activities. In Andhra Pradesh, 31 percent respondents worked on their own land while an equal percentage of respondents (10%) worked on rented land or on someone else's land. Around less than half the number of respondents (48%) were not engaged in land related activities.

## 2.10. Household income

**Table 12: Annual Household Income**

Income Range	Odisha	Andhra Pradesh
Income	%	%
<25000	6	2
25, 000-50, 000	39	17
50, 000-75, 000	26	22
75, 000 – 1,00, 000	15	40
1,00, 000-2,00, 000	11	18
>2,00, 000	4	3
<b>Base</b>	<b>1000</b>	<b>1000</b>

The table above provides information on the annual household income. The respondents were asked to provide the annual family income, from different and all sources. It was observed that majority (39%) of the respondents for Odisha earned an annual income in the age range of Rs. 25,000 to Rs.50,000. In Andhra Pradesh two-fifths (40%) of all respondents earned an annual income in the range of Rs.75,000 to Rs.1 Lakh.

## 2.11. Family Size Details



### 2.11.1. Number of Children in the household

**Table 13: Number of Children**

Children in the family	Odisha		Andhra Pradesh	
	Male	Female	Male	Female
	%	%	%	%
2 Children and below	94	93	90	92
3 – 4 Children	5	7	10	8
5 and above	1	-	-	-
<b>Base</b>	<b>1000</b>	<b>1000</b>	<b>1000</b>	<b>1000</b>

According to the data presented in the table above, the number of children in the family is recorded. It is observed that majority of the households in Odisha have at least 2 male (94%) and female (93%) children. A larger percentage of households (7%) have 3-4 female children than 5 percent who have 3-4 male children. Only 1 percent of the households have more than 5 male children in the family. In Andhra Pradesh, 9 in 10 households have less than 2 male children (90%) while in 92 percent of the households there are below 2 female children. Further, it is seen that 10 percent of households have 3-4 male children and 8 percent 3-4 female children.

### 2.11.2. Total members in the family

**Table 14: Total members in the family**

Total members in the family	Odisha		Andhra Pradesh	
	Male	Female	Male	Female
	%	%	%	%
2 members and below	47	51	59	66
3 – 4 members	40	37	37	30
5 and above	13	12	4	4
<b>Base</b>	<b>1000</b>	<b>1000</b>	<b>1000</b>	<b>1000</b>

With regard to total members living in the family as presented in the table above, it is observed that in Odisha less than marginally less than half of all households (47%) have 2 male members or below and 51 percent have at least 2 female members while 40 percent have 3 to 4 members and 13 percent have over 5 members in the family indicating that the family size is small and predominantly nuclear type of family with father, mother and children.

In Andhra Pradesh in three-fifth of all households covered (59%) there are at least 1 or 2 male members and 66 percent households have 1 to 2 female members. While 37 percent households have 3-4 male members, 30 percent have 3-4 female members. Only 4 percent households have either more than 5 male/ female members.

### 2.11.3. Total disabled members in the family

**Table 15: Disabled members in a family**

Disabled members in the family	Odisha	Andhra Pradesh
	%	%
No disabled members	92	95
At least one member disabled	8	5
<b>Base</b>	1000	1000

The table above presents the scenario of differently abled members in the family. It is evident from the above table that in Odisha 8 percent households have at least 1 member in the family who is differently abled. In Andhra Pradesh 3 percent households have at least one differently abled member in the family.

### 2.11.4. Total working members in the family

**Table 16: Working members in a family**

Working members in a family	Odisha		Andhra Pradesh	
	Male	Female	Male	Female
	%	%	%	%
No working members	2	92	3	45
1 members	61	8	77	51
2 members	26	-	15	4
3 members	9	-	4	-
4 members	2	-	1	-
<b>Base</b>	<b>1000</b>	<b>1000</b>	<b>1000</b>	<b>1000</b>

The above table presents information about the number of children, members, differently abled members and lastly working members in the family. The respondent was asked to count the children who currently living with them in their household and were under the age of 18 years. It is noticed

from the above table, that the majority of the families' in Odisha, 40 percent have one boy child and 35 percent one girl child. Similarly it was observed that for Andhra Pradesh majority of the families have one boy (43 %) child and 47 percent have one girl child.

Information on total family members, the respondent was asked to count all the family members in the household who are currently living with them in their household. Based on the responses it was observed that majority of the families in Odisha, 35 percent have at least two male members, and 32 percent have two female members. In Andhra Pradesh it was observed that 43 percent of the families have at least two members in the family.

In this context, the respondents were asked to count the number of family members who were differently abled and were currently living with the household. It was observed that 5 percent in Odisha has at least one male and 3 percent of the families have at least one female member who is differently abled. Similarly for Andhra Pradesh it was observed that 3 percent of the families have at least one male and 2 percent of the families have at least one female member who is differently abled.

Information on total numbers of working members, the respondents were asked to count the total number of family members who are currently a daily/monthly/annual income and were residing in the household. It was observed that in 61 percent of the families there was at least one male earning member, and 8 percent of the families have at least one female earning member. Similarly, for Andhra Pradesh, it was observed that 77 percent of the families have at least one male earning member in the family, and 51 percent have at least one female earning member in the family.

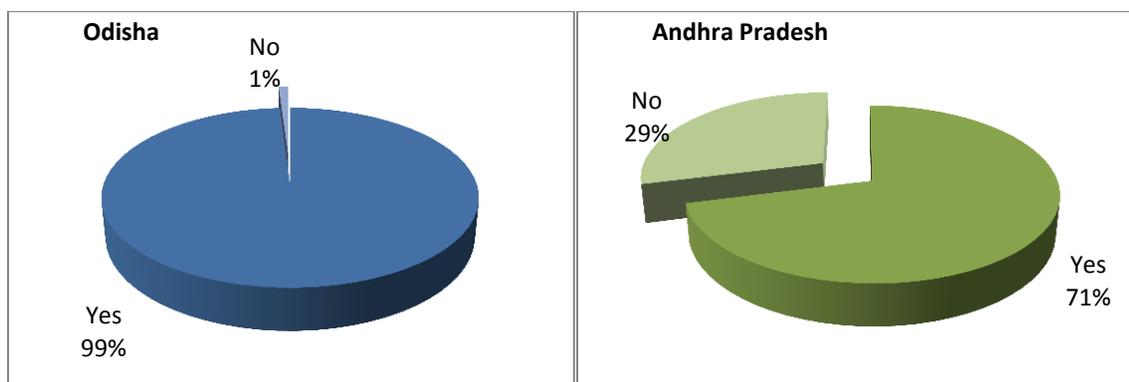
## CHAPTER III

### Early Warning and Dissemination System (EWDS)

(Comprehensive EWDS provides warning to public during pre/post disaster period through mass coverage electronic means like SMS/voice communication through mobile, VHF sets, alert towers, TV channels, satellite phones etc. System integrates State Emergency Operation Centre (EOC), District EOC, Tehsil EOC to the affected public mass.

#### 3.1. Aware of comprehensive Early Warning dissemination Systems (EWDS)

Figure-5: Aware of comprehensive Early Warning dissemination Systems (EWDS)



Base: All

The figure above presents awareness as of now on comprehensive Early Warning Dissemination System (EWDS). It is observed that almost all (99%) of the respondents in Odisha are aware of comprehensive EWDS. In Andhra Pradesh also it is observed that more than two-third of respondents (71%) mentioned that they are aware of EWDS. Further, it is seen that among respondents who were not aware of comprehensive EWDS, all universally mentioned that there is a requirement for a EWDS.

#### 3.2. Know about the place where the Early warning system is installed

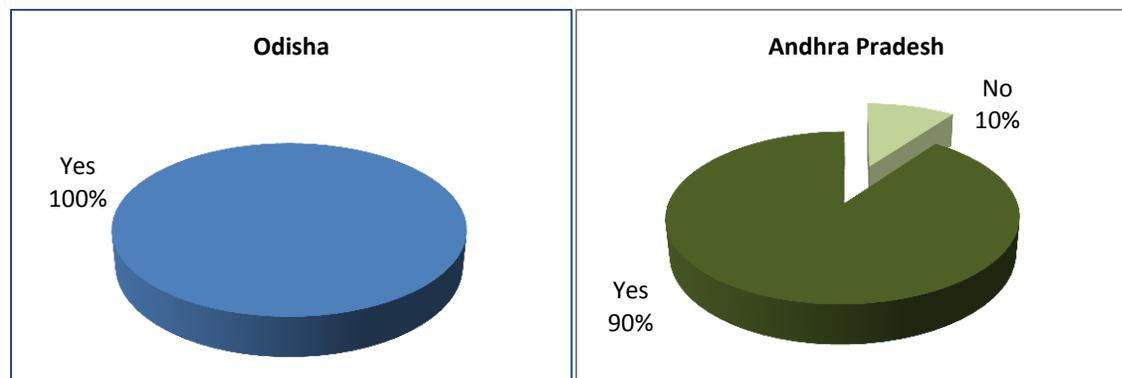
Table 17: Know about the place where Early Warning System is installed

Knowledge about the location of the EWS as reported		Odisha	Andhra Pradesh
		%	%
Yes		11	7
Type of EWS	Alert Tower	3	-
	VHF (Very High Frequency)	8	-
	T.V/ Police wireless/ SMS/ Phone call	-	7
No		89	93

According to the table presented above, information about the knowledge about the location of the EWDS in the village is captured. It is observed that only 11 percent of respondents in Odisha mentioned that they know where the EWDS is installed in the village. In Andhra Pradesh, it is observed that 7 per cent mentioned that they knew about the location where the EWDS is located.

### 3.3 Ever received early warning for disasters in village

Figure-6: Ever received early warning for disasters in village



Base: All

According to the figure above, data pertaining to respondents ever receiving early warnings for disasters in the village is captured. It is observed from the figure that in Odisha, all the respondents (100%) mentioned that they received early warnings for disasters in their villages. In Andhra Pradesh, 90 per cent of the respondents mentioned that they received the early warnings, while 10 percent mentioned that they did not receive any early warnings for any disasters in their village.

### 3.4 Time period for receiving the warning

Table-18: Time period of receiving the warning

Time frame of receiving the warning	Odisha	Andhra Pradesh
	%	%
48 hours before disaster	28	70
24 hours before disaster	54	29
12 hours before disaster	16	1
6 hours before disaster	2	-
One hour before disaster	-	-
<b>Base</b>	<b>1000</b>	<b>902</b>

Information about the how much in advance was the early warning provided to the respondents before a disaster such as cyclones/earthquakes hit their village is presented in the above table. This information was solicited from respondents who mentioned that they received early warning for disasters. In Odisha, it is observed that 54 percent mentioned receiving the warnings 24 hours before the disaster while 28 percent mentioned that they received the warning 48 hours before the disaster and 16 percent received warnings 12 hours before the disaster. The remaining 2 percent mentioned that they received the warning only 6 hours before the disaster struck. In Andhra Pradesh, it was observed that 70 percent received warnings 48 hours before the disaster struck, 29 percent mentioned that they received the warnings 24 hours before the disaster strike their respective village.

## CHAPTER IV

### Multi-Purpose Cyclone Shelter (MPCS)



#### 4.1. MPCS in village/ locality [From March 2014]

Table-19: MPCS in village/ locality [From March 2014]

Presence of MPCS in village/ locality	Odisha	Andhra Pradesh
	%	%
Yes	90	67
No	10	33
<b>Base</b>	<b>1000</b>	<b>1000</b>

The table presented above provides information pertaining to presence of MPCS in the village/ locality since June 2014. In response to the same, it is observed that 9 in 10 respondents (90%) in Odisha stated that MPCS is present in the village/ locality. In Andhra Pradesh more than two-third of all respondents (67%) stated that MPCS is present in their village/ locality. Among those who reported no MPCS in their village/ locality, almost all expressed the need. With regard to awareness of any proposal to construct MPCS in future, 4 percent among those who reported no MPCS (10%) in odisha and 14 percent among (33%) were reportedly aware of.

#### 4.2. MPCS in village/ locality [From March 2014] under which Scheme

**Table-20: MPCS in village/ locality [From March 2014] under which Scheme**

Scheme of MPCS	Odisha	Andhra Pradesh
	%	%
NCRMP	52	30
Not aware of scheme	39	69
Other scheme	9	1

The table presented above indicates the scheme under which the MPCS was constructed according to the respondents. It is observed from the above that in Odisha over half of all respondents (52%) stated that the MPCS was constructed under NCRMP. While around 40 percent were not aware of the scheme, 9 percent mentioned that the MPCS was constructed under some other scheme. In Andhra Pradesh roughly one-third (30%) of all respondents said that the MPCS was constructed under MPCS while more than two-thirds (69%) said they were not aware of the scheme and only 1 percent opined that it was constructed under some other scheme.

#### 4.3. MPCS in village/ locality [before June 2010]

**Table-21: MPCS in village/ locality [before June 2010]**

Presence of MPCS in village/ locality	Odisha	Andhra Pradesh
	%	%
Yes	40	35
No	60	65
<b>Base</b>	<b>1000</b>	<b>1000</b>

The table presented above provides information pertaining to presence of MPCS in the village/ locality before June 2010. In response to the same, it is observed that 40 percent respondents in Odisha and 35 percent in Andhra Pradesh were present in their village/ locality. There is a marked increase of MPCS in village/ locality from March 2014, 50 percent in Odisha and 32 percent in Andhra Pradesh.

#### 4.4. Capacity for shelter to animals in MPCS

**Table-22: Capacity for shelter to animals in MPCS**

Capacity for shelter to animals	Odisha	Andhra Pradesh
	%	%
Yes	61	38
No	39	60
<b>Base</b>	<b>1000</b>	<b>1000</b>

The table above describes whether capacity for shelter to animals is currently present in the MPCS. From the data, it is observed that close to two-third of all respondents in Odisha (61%) mentioned that currently there is capacity for shelter to animals. In Andhra Pradesh two-fifth of all respondents (38%) stated that the MPCS currently has capacity for shelter to animals.

#### 4.5. MPCS provided shelter to animals before June 2010

**Table-23: MPCS provided shelter to animals before June 2010**

Shelter provided to animals before 2010	Odisha	Andhra Pradesh
	%	%
Yes	25	4
No	75	96
<b>Base</b>	<b>1000</b>	<b>1000</b>

In response to the question on whether MPCS provided shelter to animals before June 2010, it is observed that one-fourth of all respondents in Odisha (25%) stated that the MPCS provided shelter to animals before June 2010. In Andhra Pradesh, only 4 percent of respondents said that the MPCS provided shelter to animals during the same period. There is a marked increase for capacity to shelter of animals in MPCS in village/ locality from March 2010, 36 percent in Odisha and 34 percent in Andhra Pradesh.

#### 4.6. Distance between MPCS and home

**Table-24: Distance between MPCS and home**

Distance between MPCS and home	Odisha	Andhra Pradesh
	%	%
Less than 1 Km	50	66
Less than 2 Km	12	3
Less than 5 Km	8	9
Not sure / Do not know	30	22

According to the table presented above, the accessibility of MPCS from the homes of the respondents can be gauged. It is observed that in Odisha half of all respondents (50%) said that the MPCS was located within a Km from their home while 12 percent said that the MPCS was less than 2 Km away and 8 percent said the MPCS was within 5 Km from their home. Less than a third of respondents in Odisha did not know about the exact distance between the MPCS and home. In Andhra Pradesh two-thirds of respondents stated that the MPCS was less than a Km from their home while 3 percent said it was located within 2 Km and 9 per cent within 5 Km from their home. Around one-fifth of respondents (22%) were not sure or did not know the distance between the MPCS and their homes.

#### 4.7. Capacity of MPCS

**Table-25: Capacity of MPCS**

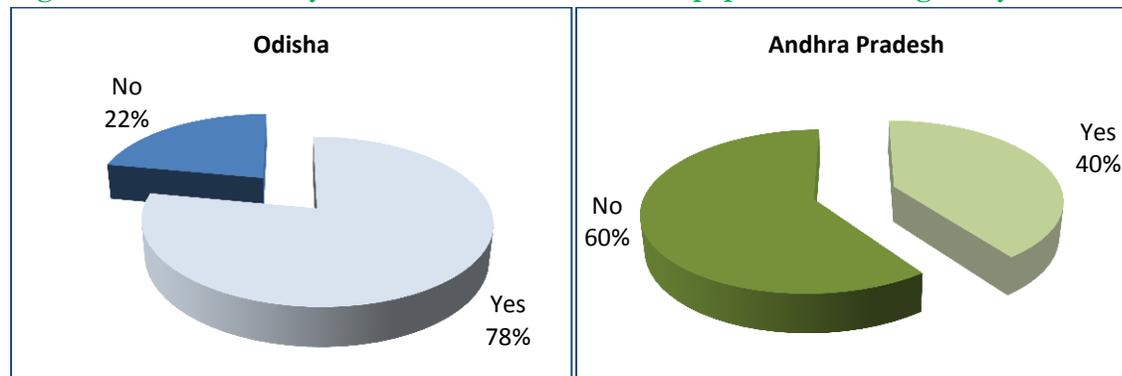
Capacity of MPCS	Odisha	Andhra Pradesh
	%	%
Up to 500 persons	28	38
500-750 persons	20	16
750-1000 persons	15	12
>1000 persons	12	8
Do not know	25	26

The table presented above describes the capacity of MPCS as stated by the respondents who may have availed such shelter in the past. It may be observed that in Odisha, majority of the 28 percent respondents opined that the capacity of the MPCS was up to 500 persons while one-fifth (20%) said it could accommodate 500-750 persons. While 15 percent stated that the MPCS had a capacity of 750-1000 persons, 12 percent said the shelter had a capacity of over 1000 persons. However, one-

fourth of respondents (24%) did not know the capacity of the MPCS. In Andhra Pradesh, a similar trend can be observed with close to 40 percent stating that the MPCS had a capacity of up to 500 persons, 16 percent stating that it had a capacity of 500-750 persons, 12 percent 750-1000 persons and 8 percent above 1000 persons. The remaining 26 percent respondents did not know the capacity of the MPCS.

#### 4.7.1. MPCS can fully accommodate the vulnerable population of village at cyclone

Figure-7: MPCS can fully accommodate the vulnerable population of village at cyclone



Base: All

According to the data presented in the graph above, the extent of coverage of MPCS for vulnerable population was captured. In response to this question, 78 percent of respondents in Odisha opined that the MPCS could accommodate vulnerable population in the village. In Andhra Pradesh, 40 percent of the respondents said that the MPCS could accommodate vulnerable population in the village.

#### 4.8. Infrastructural Facilities within MPCS

Table-26: Infrastructural Facilities within MPCS

Facilities in MPCS	Odisha		Andhra Pradesh	
	Yes	No	Yes	No
	%	%	%	%
Adequate drinking water	76	24	46	54
Uninterrupted power supply	42	58	22	78
MPCS Clean and tidy	44	66	24	66
Good toilet and bathing facilities	40	60	28	62

The table above depicts the infrastructural facilities and condition of the MPCs in the villages. From the above, it is observed that in Odisha more than three-fourths of all MPCs (76%) have adequate drinking water while a lesser percentage (42%) have uninterrupted power supply and 44 percent MPCs are clean and tidy and 40 percent have good toilet and bathing facilities. The MPCs in Andhra Pradesh are reportedly wanting in infrastructure with 46 percent stating that there is adequate drinking water, 22 percent opined there is uninterrupted power supply, 24 percent stated that it is clean and tidy and a further 28 percent stating that the MPCs has good toilet and bathing facilities.

#### 4.9. Cyclone Shelter Maintenance and Management Committee constituted and functional

**Table-27: Cyclone Shelter Maintenance and Management Committee constituted and functional**

Facilities in MPCs	Odisha		Andhra Pradesh	
	Yes	No	Yes	No
	%	%	%	%
CSMMC constituted and functional	40	60	35	65
MPCS used during normal times	56	44	45	55

The table above provides responses to constitution and functioning of Cyclone Shelter Maintenance and Management Committee (CSMMC) in the respective states. It is evident from the above that two-fifth of the respondents (40%) in Odisha stated that the CSMMC was constituted and functional and more than half (56%) said that the MPCs was used during normal times. In Andhra Pradesh slightly over one-third of all respondents (35%) stated that the CSMMC was constituted and functional and less than half (45%) of all respondents said that the MPCs was used during normal times. In response to the question on how the MPCs was used in normal times (i.e., when it was not used to provide shelter for people who were evacuated during cyclones), in Odisha, three-fourth of the respondents were not aware of how the MPCs was used. Among those who were aware, 7 percent stated that the MPCs was used as a meeting hall and 5 percent said that it was used as a school. An equal percentage of 1 percent of respondents stated that the MPCs was used for a variety of purposes including as a function hall, used by Voluntary organisations for conducting different kinds of coaching, place where people take shelter while their house is under construction, play school for children, ceremony house for various social occasions, Anganwadi Centre, place for indoor games, exhibitions, tuition centre for children, picnic spot, recreation centre, etc.

In Andhra Pradesh, in response to the same question, around 60 percent of all respondents were not aware on how the MPCs centre was used. Among those who were aware, an equal 7 percent said that the MPCs was used as a school and Anganwadi centre while 5 percent said it was used as a meeting hall. An equal percentage of respondents (3%) mentioned that the MPCs was used as a function hall

and to store foodgrains. Two percent of respondents equally mentioned that the centre was used as a veterinary/ animal hospital, shelter for people whose house is under construction, place for fishermen to keep their boats and nets. Finally an equal percentage of one percent of respondents said the MPCS was used as a Panchayat office, training centre for voluntary organizations, health camp venue, tailoring centre, rented out for various purposes, play school for children, ceremony house for various occasions, used as a government building, bank, etc.

#### 4.10. Maintenance of MPCS

**Table-28: Maintenance of MPCS**

Maintenance of MPCS	Odisha	Andhra Pradesh
	%	%
Gram Panchayat/ Local Body	4	41
Cyclone Shelter Maintenance and Management Committee (CSMMC)	33	2
District Disaster Management Authority (DDMA)/District Administration	5	3
Not sure/ Don't know	2	8

According to the table presented above, the maintenance of MPCS by different authorities was probed in both the study states. From this, it is seen that in Odisha, the onus of maintenance of the MPCS primarily rests with the Cyclone Shelter Maintenance and Management Committee (CSMMC), as stated by 33 percent of the respondents. In Andhra Pradesh, the Gram Panchayat or local body is held mainly responsible for the maintenance of the MPCS, opined by a large 41 percent of all respondents.

## CHAPTER V

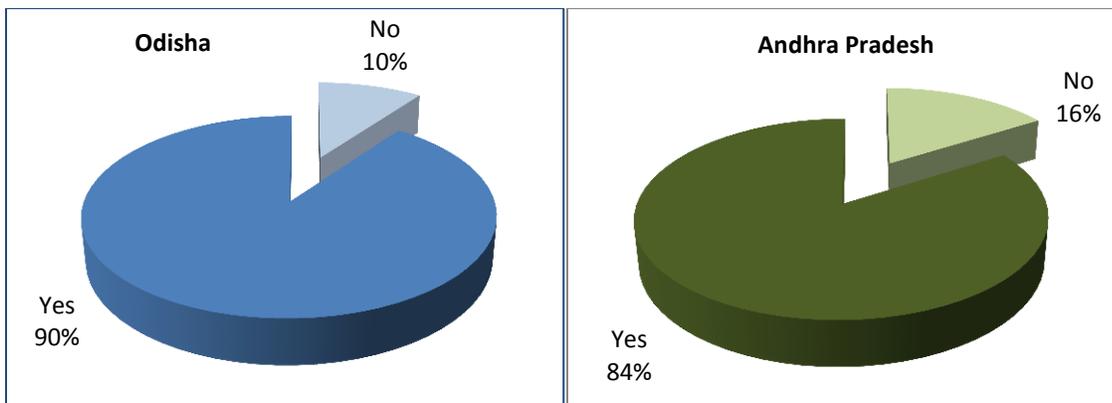
### Roads, Bridges and Saline embankments



The following section presents data on existence of roads, bridges and saline embankments in the study areas and where absent the need for the same expressed by the respondents. The data also threw light on the existence of these structures with retrospective effect, i.e., if they existed prior to June 2010.

#### 5.1. Village connected with road

Figure-8: Village connected with road



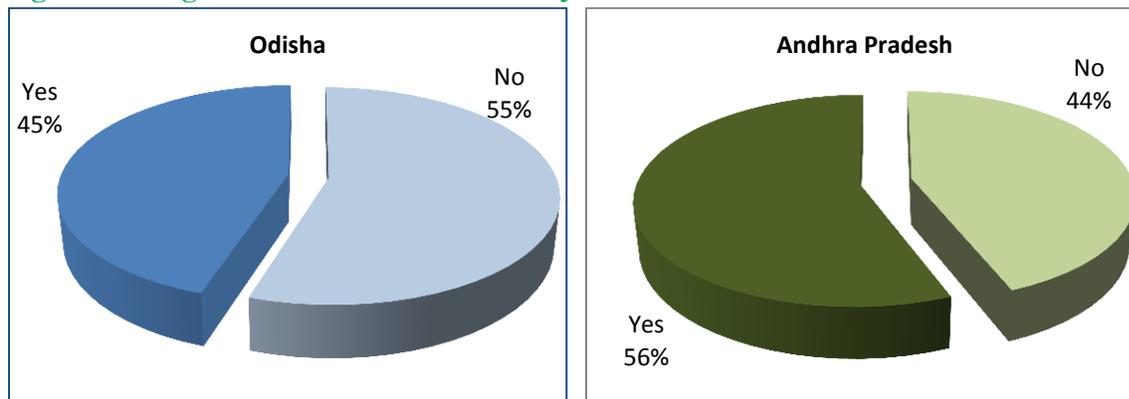
Base: All

The figure above describes connectivity of the village by road, assessed among respondents from their respective villages in the 50 villages covered in the study. From the above, it is observed that in Odisha 9 in 10 respondents (90%) said that the village is connected by road. In Andhra Pradesh, 84 percent of the respondents said that the village they live in is connected with a road.

Among respondents who said there is no road connectivity to their respective villages, in Odisha all respondents (10%) agreed that there is a need for road to be constructed to the village. In Andhra Pradesh where villages were not covered by road, all 16 percent of respondents stated that there is a need for road to be constructed to the village.

### 5.2. Village connected with road before June 2010

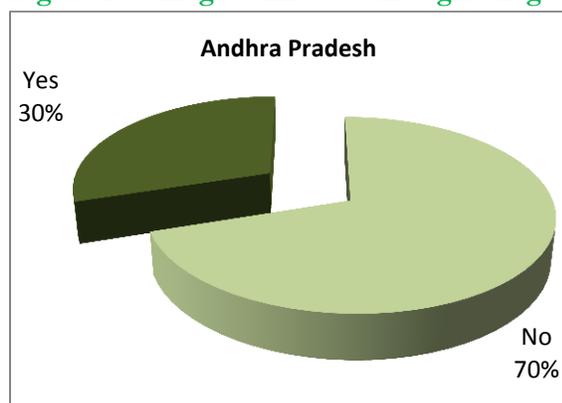
Figure-9: Village connected with road before June 2010



According to the figure above, data pertaining to road connectivity to the village before June 2010 has been captured. From the above, it is observed that almost half of all respondents in Odisha (45%) said that the village was connected by road before June 2010. In Andhra Pradesh, more than half of all respondents (56%) stated that the village was connected by road before June 2010. There is a marked increase with regard to villages connected by roads from March 2010, 45 percent in Odisha and 28 percent in Andhra Pradesh.

### 5.3. Village connected through bridge

Figure-10: Village connected through bridge



The figure above describes if there are any bridges in the village that provide connectivity to the village, assessed among respondents from their respective villages in the 50 villages covered in the study. In Andhra Pradesh, 30 percent of respondents said that there was a bridge that enhanced connectivity to the village.

#### 5.4. Need for bridge to be constructed to connect to the village as of June 2014

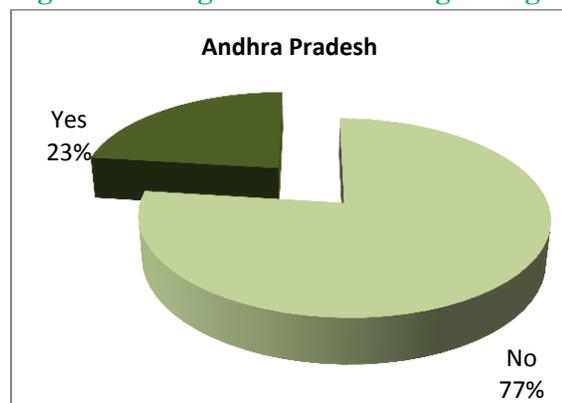
**Table-29: Need for bridge to be constructed to connect to the village as of June 2014**

Need bridge to be to connect to the village	Andhra Pradesh
	%
Yes	61
No	39
<i>Base</i>	<b>700</b>

In Andhra Pradesh, of those who opined that there is no bridge, 61 percent felt that there was a need for bridge to be constructed to improve connectivity with the village, while 39 percent of them mentioned that there was no need for a bridge to be constructed.

#### 5.5. Village connected through bridge before 2010

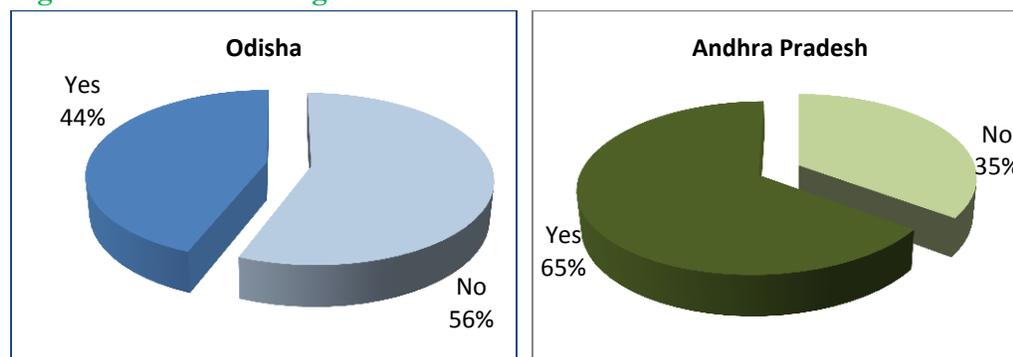
**Figure-11: Village connected through bridge before 2010**



The figure above analyzes the connectivity of the village through bridge before June 2010. The data is presented only for Andhra Pradesh. In Andhra Pradesh, less than one-fourth of all respondents (23%) stated that a bridge existed in their respective village before June 2010.

#### 5.6. MPCS in village connected with road

**Figure-12: MPCS in village connected with road**



The table above indicates whether the MPCS in the village is connected with road. It is observed that 44 percent of the respondents in Odisha stated that the MPCS is connected with a road. In Andhra Pradesh more than two-thirds of respondents (65%) said that there is road connectivity to the MPCS.

### 5.7. Need for road to connect to the MPCS

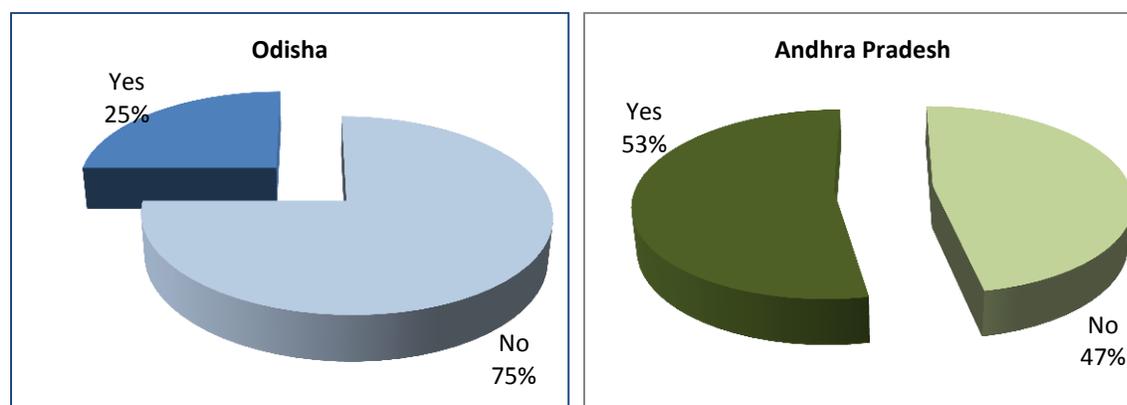
**Table-30: Need for road to connect to the MPCS**

Need for road to be constructed to connect to the MPCS	Odisha	Andhra Pradesh
	%	%
Yes	41	71
No	59	29
<i>Base</i>	<b>560</b>	<b>350</b>

From the data presented in the table above, among those respondents who said that there was no road connecting the MPCS, the need for constructing an approach road to the MPCS is obtained. From the above, it is seen that a similar almost one-fourth of all respondents in both Odisha (23%) and Andhra Pradesh (25%) said that they felt a need for a road to be constructed to connect to the MPCS.

### 5.8. MPCS in village connected with road before June 2010

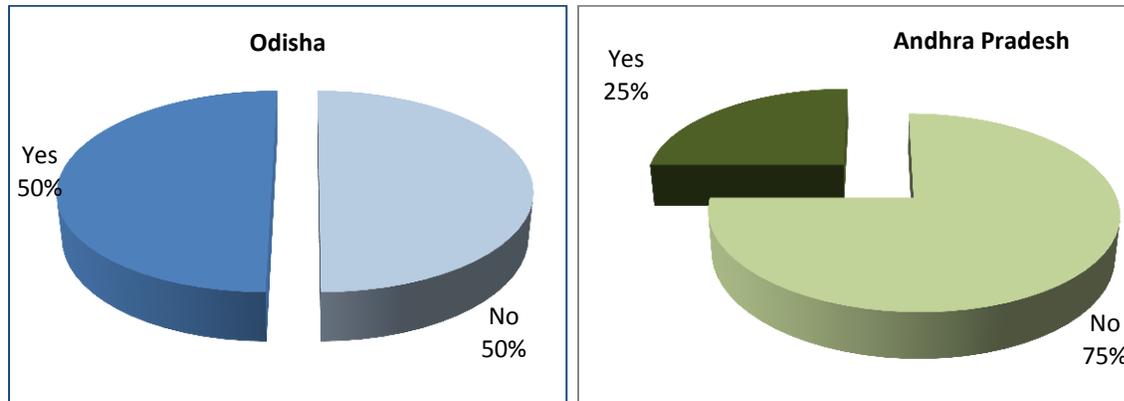
**Figure-13: MPCS in village connected with road before June 2010**



To the question on whether the MPCS in the village was connected by a road before March 2010, in Odisha one-fourth of all respondents said that the MPCS was connected by a road before this time period. In Andhra Pradesh, more than half of all respondents (53%) mentioned that a road existed before June 2010 connecting the village with the MPCS. There is an increase with regard to MPCS connected by roads from March 2010, 19 percent in Odisha and 12 percent in Andhra Pradesh.

## 5.9. Saline embankment in village

Figure-14: Saline embankment in village



The table above presents data on presence of saline embankments in the study villages in the two states. From the above it is understood that half of all respondents (50%) in Odisha said that there were saline embankments in the village. However, in Andhra Pradesh 25 percent of the respondents said that the village had any saline embankments.

### 5.9.1. Coverage of population protected by Saline Embankment

Table-31: Coverage of population protected by Saline Embankment

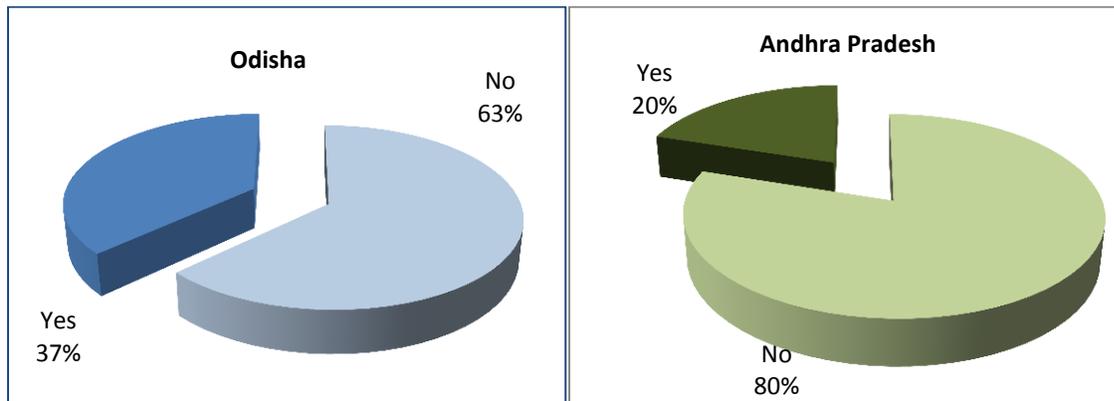
Saline embankment in your village or under construction		Odisha	Andhra Pradesh
		%	%
<b>Yes</b>		<b>50</b>	<b>25</b>
If Yes, how much of population will be protected	Below 25 %	13	0
	Below 50%	11	18
	Below 75%	17	7
	100%	9	0
<b>No</b>		<b>50</b>	<b>75</b>
If no, is there need to have saline embankment	Yes	35	60
	No	15	15
Base		<b>1000</b>	<b>1000</b>

According to the table above, the respondent's perception of the extent of coverage of population protected as a result of saline embankments was ascertained. From this, it is seen that in Odisha a larger percentage (17%) said that saline embankments protect 75 percent of the population while 13 percent felt that below 25 percent could be protected and the remaining 11 percent said that half the

population (50%) could be protected as a result of saline embankments in the village. In Andhra Pradesh, 18 percent were of the opinion that saline embankments protect half the population while 7 percent mentioned that they could protect three-fourth of the village population (75%).

#### 5.10. Saline embankment in village before June 2010

Figure-15: Saline embankment in village before June 2010



The figure above presents the existence of a saline embankment in the village before June 2010. From the above, it is observed that in Odisha 37 percent of the respondents said it was there during this period while in Andhra Pradesh 20 percent said that saline embankment was there before. There is an increase with regard to saline embankment protecting village land from march 2010, 13 percent in Odisha and 5 percent in Andhra Pradesh.

## CHAPTER VI

### Capacity Building

#### 6.1. Training and Capacity Building of household members in EWDS

**Table-32: Training and Capacity Building of household members in EWDS**

Your household trained in Early Warning And Evacuation System for cyclone		Odisha	Andhra Pradesh
		%	%
Yes		7	3
If yes, specify	Self	3	3
	Son	3	0
	Brother	1	0
No		93	97
If no, do you want to get trained	Yes	73	75
	No	20	22
Base		1000	1000

The table above sheds light on the efficacy of training and capacity building activities with respect to EWDS at the household level across the study states. From the above, it is observed that only 7 percent of respondents in Odisha were reportedly trained in Early warning and evacuation system. The proportion in Andhra Pradesh was lower at only 3 percent household members trained in Early warning and evacuation system. However, in both the states, three-fourths of respondents felt the need to be trained in early warning and evacuation system as mentioned by those in Odisha (73%) and Andhra Pradesh (75%).

Further, it is seen that among those who were trained, it was usually the respondent himself and other close relatives within the family such as son or brother.

## 6.2. Training and Capacity Building of household members in Disaster Management Skills

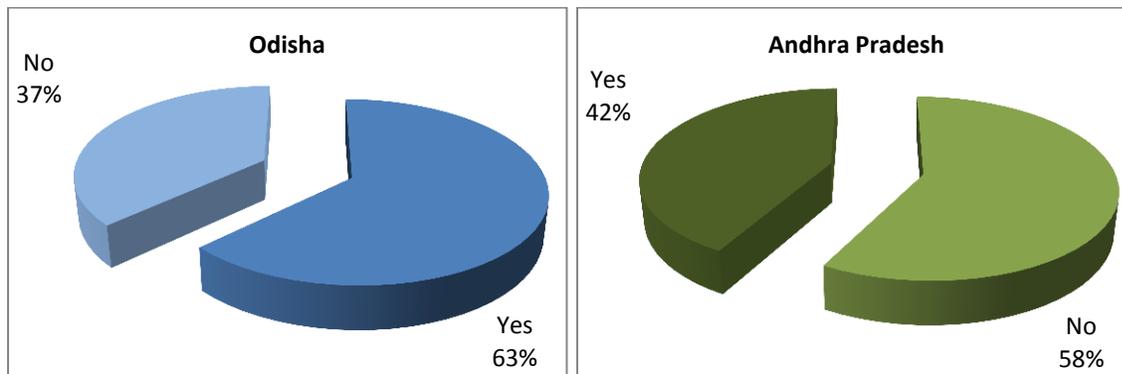
**Table-33: Training and Capacity Building of household members in Disaster Management Skills**

Your household trained in Disaster Management skills system for cyclone		Odisha	Andhra Pradesh
		%	%
Yes		8	3
If yes, specify	Self	4	2
	Son	3	1
	Brother	1	0
If yes, which type	Cyclones	6	2
	Earthquake		
	Floods	2	1
If yes, When the person was trained last time	In Last 6 months	6	
	One year before	1	1
	Before three years	1	2
If yes, When the person was trained first time	Even before June 2010	2	2
	After June 2010 to 2014	6	1
No		<b>92</b>	<b>97</b>
If no, do you want such training?	Yes	75	76
	No	17	21
Base		<b>1000</b>	<b>1000</b>

According to the table above, participation of household members in training and capacity building activities pertaining to disaster management skills is presented. From the same, it may be ascertained that only less than 10 percent of all respondents in Odisha (8%) and Andhra Pradesh (3%) were reportedly trained in disaster management skills and those who got trained were either the respondent themselves or close relatives as brother or son. The main themes on which the respondents were trained included cyclones followed by floods. While most respondents in Odisha (6%) were trained in such activities within the last 6 months, in Andhra Pradesh 2 percent received such training before three years. Finally, around three-fourths of all respondents in both states – Odisha (75%) and Andhra Pradesh (76%) expressed the need for such training in future.

### 6.3. Trained in Early Warning and Evacuation System for cyclone

Figure- 16: Trained in Early Warning and Evacuation System for cyclone



The figure above presents the training received by Government servants pertaining to Early warning and evacuation system. From the above, it is observed that in Odisha more than three-fifth (63%) of the government service said they were trained in various aspects of Early warning and evacuation system and understand the procedures to be followed in the even of a cyclone and floods. In Andhra Pradesh, less than half (42%) government service stated that they were trained in Early warning and evacuation system. In both the states, all those who did not receive any training reiterated that they would like to receive training in all aspects of disaster management especially on Early warning and disaster preparedness.

### 6.4. Trained in management of different type of disaster

Table- 34: Trained in management of different type of disaster

Trained in management of different type of disaster		Odisha	Andhra Pradesh
		%	%
Yes		47	38
Type of training	Cyclones	36	34
	Earthquake		
	Floods	11	4
	Other		
No		53	62
Need training	Yes	53	62
	Base	50	50

According to the table above, training in management of different types of disasters received by government officials is captured. It is seen from the above that in Odisha close to half of all respondents (47%) stated they had received training in different types of disasters – cyclones (36%)

and floods (11%). Among those who did not receive any training in different types of disasters, all respondents (53%) mentioned that they would need training on managing different types of disasters. In Andhra Pradesh two-fifth respondents (38%) stated they had received training in different types of disasters – cyclones (34%) and floods (4%). Among those who did not receive any training in different types of disasters, all respondents (62%) mentioned that they would need training on managing different types of disasters.

This section presents information about any other type of work that the respondents want the NCRMP to cover, and further if they participated in any mock drills conducted.

### 6.5. Any other type of work to be carried out under NCRMP

**Table- 35: Any other type of work to be carried out under NCRMP**

Any other type of work to be carried out under NCRMP	Odisha	Andhra Pradesh
	%	%
Yes	92	81
No	8	19
Base	1000	1000

The above table presents information if the respondents want any other work to be carried out by NCRMP. It was observed that majority of the respondents 92 percent in Odisha and 81 percent in Andhra Pradesh mentioned that they want additional work to be carried out. The details of the work ranged from providing water, schooling and hospital services to employment opportunities under construction of cyclone building, saline embankment, among others.

### 6.6. Participation in any mock drill for evacuation/ disaster management

**Table- 36: Participation in any mock drill for evacuation/ disaster management**

Participation in any mock drill for evacuation/ disaster management	Odisha	Andhra Pradesh
	%	%
Yes	5	15
No	95	85
Base	1000	1000

The above table provides information about the respondents participating in mock drills, it was observed that 5 percent of the respondents in Odisha mentioned that they participated in mock drills, further in Andhra Pradesh it was observed that 15 percent of the respondents mentioned that they participated in mock drills.

## CHAPTER VII

### Evacuation during cyclones

#### *Cyclone Phailin, 12<sup>th</sup> October 2013*

Very Severe Cyclonic Storm Phailin was the second-strongest tropical cyclone ever to make landfall in India, behind only the 1999 Odisha cyclone. The responses of communities/ households / respondents in all coastal districts of Odisha and Srikakulam and Vizainagram districts in AP is compiled.



#### 7.1.1 Received warning of Cyclone Phailin in time and how much in advance

**Table-37: Received warning of Cyclone Phailin in time and how much in advance**

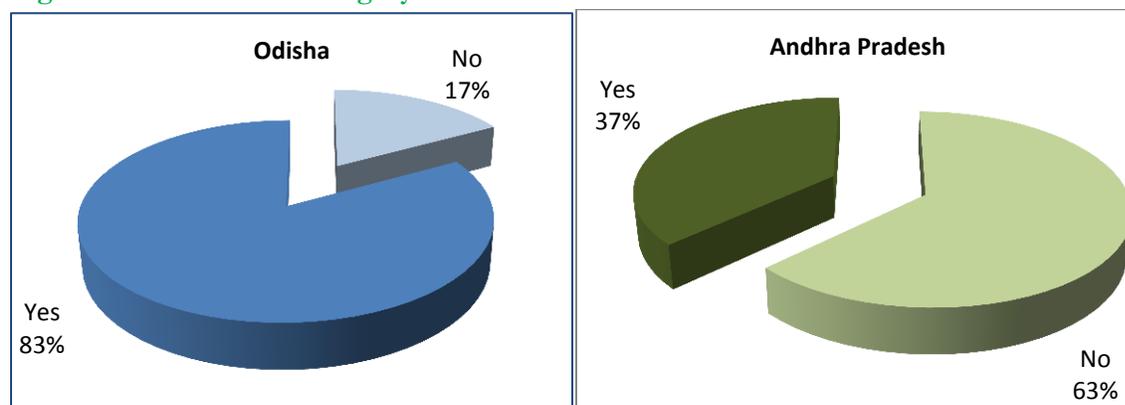
Received warning of Cyclone Phailin in time		Odisha	Andhra Pradesh
		%	%
Yes		100	90
No		0	10
How much in advance	72 hours	14	14
	48 hours	40	57
	24 hours	45	18
	Any Other	1	9
Base		1000	220

The respondents in both the states were asked questions on the impact of the recent cyclones that hit the coastal areas in order to assess their response and determine the disaster preparedness. It is observed from the table above that all respondents in Odisha (100%) and 90 percent of respondents in Andhra Pradesh received warning of Cyclone Phailin in time. Further, it is seen that in Odisha

slightly less than half (45%) received warning of the cyclone before 24 hours while another 40 percent received such warning 48 hours in advance (2 days) while 14 percent received the warning in 72 hours. In Andhra Pradesh more than half the number of respondents (57%) reported that they received warning of the cyclone 48 hours in advance while 18 percent received such warning in 24 hours and 14 percent received warning of the cyclone before 72 hours.

### 7.1.2 Evacuation during Cyclone Phailin

Figure-17: Evacuation during Cyclone Phailin



The figure above indicates the extent of evacuation during Cyclone Phailin in both the states. From the above it is seen that in Odisha 83 percent of the respondents evacuated during the cyclone. In Andhra Pradesh less than two-fifth (37%) of the respondents evacuated during Cyclone Phailin.

### 7.1.3 Evacuation during Cyclone Phailin, place evacuated to, Scheme under which shelter constructed and reason for evacuation

Table-38: Evacuation during Cyclone Phailin, place evacuated to, Scheme under which shelter constructed and reason for evacuation

Evacuation during Cyclone Phailin		Odisha	Andhra Pradesh	
		%	%	
Yes		83	37	
Place evacuated to	Cyclone shelter	38	9	
	MPCS constructed under NCRMP or Other Scheme	Not aware of scheme/ Don't know	12	7
		NCRMP / Govt. / OSDMA	20	2
		Red cross has used old scheme	6	0
	Govt. Building (including Schools)	25	25	

	Other family/friend's permanent structure	20	3
Reason for Evacuation	Kutch House	38	5
	Pucca House- low plinth height	4	6
	Close to coast	19	22
	Flood	21	4
	Disabled/small children/elders	1	
No		17	10

The cumulative table above presents a number of factors related to evacuation during Cyclone Phailin. It is evident from the data that in Odisha majority of the respondents who evacuated did so to a Cyclone Shelter (38%) while 25 percent took shelter in a Government building such as school, etc., and the remaining one-fifth (20%) went to live in a family/ friend's house [permanent structure]. The main reasons for evacuation cited by the respondents included living in a *Kutch* house (38%), flooding (21%), close proximity to the coast (19%) and low plinth height in a *Pucca* house (4%), and having disabled/ small children/ elders (1%).

#### 7.1.4. Reasons for not evacuating during Cyclone Phailin

**Table-39: Reasons for not evacuating during Cyclone Phailin**

Common reasons cited by the respondents for not evacuating	
Odisha	Andhra Pradesh
We are far from coastal area so used to cyclones	Weak impact of cyclone
No security / no one can protect us	Most of the house in our village are Pucca house
Don't have any safe place to go	There is no cyclone centre near by
Nobody warned us	Miss the announcement

The table above lists the reasons for respondents not evacuating during Cyclone Phailin. One of the key reasons in Andhra Pradesh was the weak impact of the cyclone, hence the need evacuate not felt.

### 7.1.5. Road/ bridge constructed under NCRMP used during Cyclone Phailin

**Table-40: Road/ bridge constructed under NCRMP used during Cyclone Phailin**

Road/bridge constructed under NCRMP used for communication during Cyclone Phailin	Odisha	Andhra Pradesh
	%	%
Yes	45	6
No	36	22
Not aware/Don't know	19	72
Base	<b>1000</b>	<b>220</b>

According to the table above, the use of road/ bridge constructed under NCRMP used during Cyclone Phailin is determined. From the above, it is seen that in Odisha close to half of all respondents (45%) mentioned that Road/bridge constructed under NCRMP was used for communication during Cyclone Phailin. In Andhra Pradesh only 6 percent said that Road/bridge constructed under NCRMP was used.

### 7.1.6. Saline embankment constructed under NCRMP useful during Cyclone Phailin

**Table-41: Saline embankment constructed under NCRMP useful during Cyclone Phailin**

Saline Embankment constructed under NCRMP helpful during Cyclone Phailin	Odisha	Andhra Pradesh
	%	%
Yes	21	1
No	68	11
Not Aware	11	88
Base	1000	220

From the table presented above, the extent of use of saline embankments constructed under NCRMP has been gauged. It is observed that In Odisha, 21 percent of respondents said that saline embankments were of help during Cyclone Phailin in not allowing sea water from flooding and inundating agricultural land and also helped in arresting soil erosion in the fringes where they were constructed.

### 7.1.7. Duration to return home post Cyclone Phailin

**Table-42: Duration to return home post Cyclone Phailin**

Duration to return home	Odisha	Andhra Pradesh
	%	%
Same day	13	27
1 - 2 days	35	65
3 - 4 days	28	5
>5 days	10	0
Not aware/ Don't know	14	3
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Base</b>	<b>830</b>	<b>220</b>

The time taken to return to their respective homes from the evacuation centres – Multi Purpose Cyclone Shelters, schools (Government Buildings), other places – friend's/ relatives houses are recorded in the table above. This question has been asked to respondents who evacuated their homes during the cyclone Phailin. From this, it is evident that majority of the respondents in Odisha (28%) took 3-4 days to return to their own homes. Majority of the respondents in Andhra Pradesh took up to 1 to 2 days to return while 27 percent returned the same day.

### 7.1.8 Warning message specific on evacuation

**Table-43: Warning message specific on evacuation**

Warning message disseminated before evacuation	Odisha	Andhra Pradesh
	%	%
Announcement about approaching cyclone	66	22
Move to safer place / Cyclone shelter/ School./ PanchayatBhavan/ Relatives' house	22	56
Asked not to come out/ not to go for fishing	2	5
Did not warn/ or make any announcement	10	13
Don't Know	-	4
Base	1000	220

With respect to the specific messages/ warnings that were disseminated to the people during Cyclone Phailin there are primarily around 2-3 messages that were given to the target population which is

expressed in the table above. In Odisha, while more than two-thirds (66%) mentioned that message on “approaching cyclone” was made to the public by various authorities through mass media and electronic media, 22 percent mentioned that they were specifically asked to “Move to safer place / Cyclone shelter/ School./PanchayatBhavan/ Relatives’ house” by the evacuation personnel 2 percent were “asked not to come out [of their houses]/ not to go for fishing”

### 7.1.8. Experience of staying in MPCs/ other place during Cyclone Phailin

In response to the question on what respondents’ experience was at staying in the MPCs/ other places during Cyclone Phailin, there were mixed responses.

The responses obtained in both the states is quoted below:

#### *Odisha*

*“We are safe, we feel like we are at home”*

*“We stay here without any fear”*

*“We have no problem but we worry about our home”*

*“We got good food, the Sarpanch provided us with food”*

*“Facility needs to be more like water, electricity,*

*“Facility needs to be improved toilet, bathing”*

#### *Andhra Pradesh*

*“We have survived. We saved our life”*

*“We got shelter”*

*“We have no problem but we worry about our home”*

*“Condition of the cyclone centre, is damaged”*

*“Place is not adequate”*

*“There is no proper facility – water, electricity, no proper toilet/ bathing facility”*

## 7.2 Cyclone Helen, 22<sup>nd</sup> November 2013



**Hyderabad:** Severe cyclonic storm 'Helen', packed with wind speed reaching up to 120 kmph, is likely to hit southern Andhra Pradesh coast on Friday afternoon, the weather department has warned. The alert comes even as the state is yet to recover from the damages caused by cyclone 'Phailin' and heavy rain last month.

Information and impact of cyclone Helen was asked among all the respondents of Odisha ( i.e., 1000 respondents) while in Andhra Pradesh it was among respondents from selected seven districts of Srikakulam, Vizainagaram, Vishakapatnam, E Godavari, W Godavari, Krishna And Guntur. Hence the base for Andhra Pradesh is 720.

### 7.2.1 Received warning of Cyclone Helen in time and how much in advance

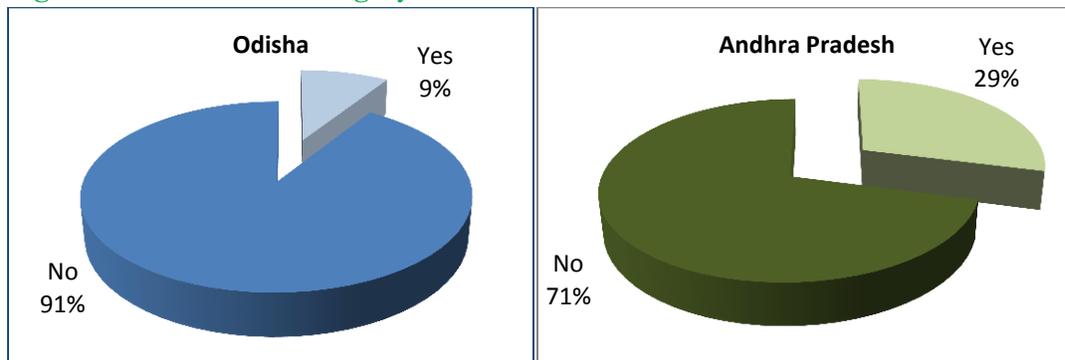
**Table-44: Received warning of Cyclone Helen in time and how much in advance**

Received warning of Cyclone Helen in time		Odisha	Andhra Pradesh
		%	%
Yes		89	94
No		11	6
How much in advance	72 hours	5	8
	48 hours	25	69
	24 hours	58	17
	Any Other	12	6
Base		1000	720

The above table presents information about warning received for cyclone Helen and how much time in advance they were received. It can be observed that majority of the respondents in both the states, Odisha (89%) and Andhra Pradesh (94%) received warnings. In can be observed that 58 percent of the respondents in Odisha received the warning 24 hours / one day in advance and in Andhra Pradesh it was observed that 69 percent of the respondents received it 48 hours / 2 days in advance.

### 7.2.2 Evacuation during Cyclone Helen

Figure-18: Evacuation during Cyclone Helen



The above figure explains that percentage of respondents who evacuated to safer locations due to cyclone Helen. It was observed that majority of the respondents in both the states did not evacuate. It was observed that 9 percent in Odisha and 29 percent in Andhra Pradesh evacuated to safer locations as a result of cyclone Helen.

The below table presents information about the percent of respondents evacuated, the type of place they evacuated to, if they evacuated to MPCs constructed by either NCRMP or any other schemes, and also reasons for evacuating their houses.

### 7.2.3 Evacuation during Cyclone Helen, place evacuated to, Scheme under which shelter constructed and reason for evacuation

Table-45: Evacuation during Cyclone Helen, place evacuated to, Scheme under which shelter constructed and reason for evacuation

Evacuation during Cyclone Helen			Odisha	Andhra Pradesh
			%	%
Yes			9	29
Place evacuated	Cyclone shelter		4	16
	MPCS constructed under NCRMP or Other Scheme.	Not aware of scheme/ Don't know	1	5
		NCRMP / Govt. / OSDMA	2	10
		Red cross has used old scheme	1	-
		Panchayat Raj	-	1
Govt. Building (including Schools)		3	12	

	Other family/friend's permanent structure	2	1
Reasons for Evacuation	Kuttcha House	5	6
	Pucca House- low plinth height	1	9
	Close to coast	1	11
	Flood	2	3
No		<b>91</b>	<b>71</b>
<b>Base</b>		1000	720

It can be observed from the table above that among the 9 percent respondents who evacuated 4 percent of them were evacuated to a Cyclone shelter, and it was further observed that 2 percent of the respondents who stayed in the cyclone shelter mentioned that it was constructed under the NCRMP scheme. Similarly for Andhra Pradesh, it was observed that 16 percent of the respondents evacuated to cyclone shelters and 10 percent of the respondents who stayed in the cyclone shelter responded that it was constructed by NCRMP. It was also observed that respondents evacuated to government buildings, and other permanent structures.

Most (5%) of the respondents evacuated as they were living in Kuttcha houses in Odisha, while in Andhra Pradesh it was observed that majority (11%) of the respondents lived close to the coast and 9 percent lived in pucca but low plinth heighted houses.

#### 7.2.4 Reasons for not evacuating during Cyclone Helen

**Table-46: Reasons for not evacuating during Cyclone Helen**

Common reasons cited by the respondents for not evacuating	
Odisha	Andhra Pradesh
Less cyclone effect	Less cyclone effect
There was no flooding	There is no cyclone center / Cyclone center is far from village
No one in neighbourhood want to be evacuated	Most of the house in our village are Pucca house
As we can't take our domestic animal / pets	We did not go to shelter/school because of past experience
Due to illness could not go	There is no water in the shelter nearby
	Based on condition of the Shelter, last time we have faced lots of trouble with children
	Difficult to stay, Insufficient space, feel congested

### 7.2.5 Road/ bridge constructed under NCRMP used during Cyclone Helen

**Table-47: Road/ bridge constructed under NCRMP used during Cyclone Helen**

Road/bridge constructed under NCRMP used for communication during Cyclone Helen	Odisha	Andhra Pradesh
	%	%
Yes	6	13
No	1	7
Not aware/Don't know	93	80
Base	1000	720

The above table presents information on the roads and bridges constructed under NCRMP. It was observed that 6 percent mentioned that the roads/ bridges were constructed under NCRMP and 13 percent in Andhra Pradesh mentioned that the roads/ bridges were constructed under NCRMP.

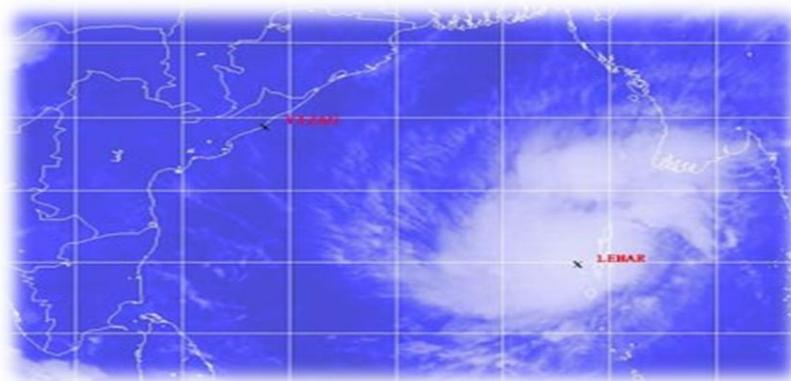
#### 7.2.5.1 Saline embankment constructed under NCRMP useful during Cyclone Helen

**Table-48: Saline embankment constructed under NCRMP useful during Cyclone Helen**

Saline Embankment constructed under NCRMP helpful during Cyclone Helen	Odisha	Andhra Pradesh
	%	%
Yes	5	2
No	1	14
Not Aware	94	84
Base	1000	720

In the context of saline embankments it was observed that 5 percent in Odisha and 2 percent in Andhra Pradesh mentioned that they were useful under cyclone Helen. While majority of the respondents mentioned that they were not aware.

## 7.3 Cyclone Lehar, 28<sup>th</sup> November 2013



**Hyderabad:** Barely a week after being hit by cyclone Helen, Andhra Pradesh is now bracing for "very severe" cyclonic storm "Lehar" that is expected to make landfall in the state on Thursday, packed with wind speed of up to 200 kmph – ND TV

For cyclone Lehar, similar to cyclone Helen, information and impact of cyclone Helen was asked among all the respondents of Odisha ( i.e., 1000 respondents) while in Andhra Pradesh it was among respondents from selected seven districts of Srikakulam, Vizainagaram, Vishakapatnam, E Godavari, W Godavari, Krishna And Guntur. Hence the base for Andhra Pradesh is 720.

### 7.3.1. Received warning of Cyclone Lehar in time and how much in advance

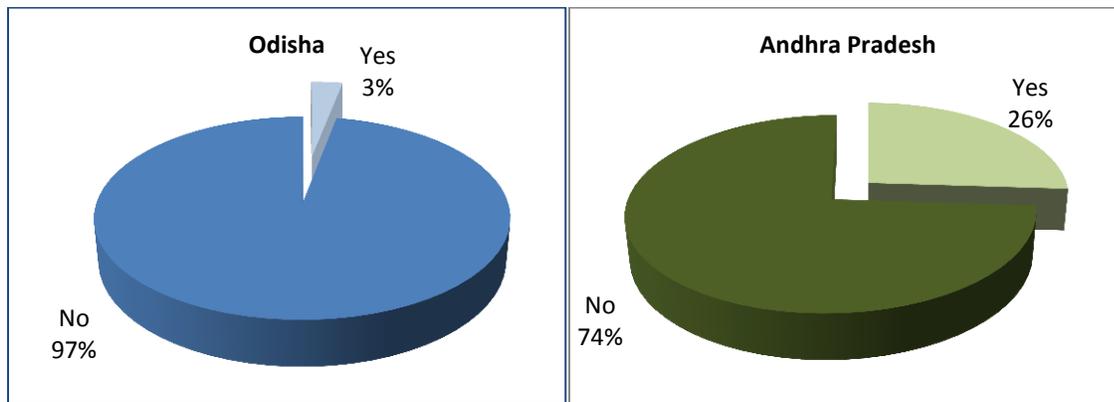
**Table-49: Received warning of Cyclone Lehar in time and how much in advance**

Received warning of Cyclone Lehar in time		Odisha	Andhra Pradesh
		%	%
Yes		66	91
No		34	9
How much in advance	72 hours	4	7
	48 hours	14	63
	24 hours	48	21
Base		1000	720

The above table presents information about warning received for cyclone Lehar and how much time in advance they were received. It can be observed that majority of the respondents in both the states, Odisha (66%) and Andhra Pradesh (91%) received warnings. It can be observed that 48 percent of the respondents in Odisha received the warning 24 hours / one day in advance and in Andhra Pradesh it was observed that 63 percent of the respondents received it 48 hours / 2 days in advance.

### 7.3.2. Evacuation during Cyclone Lehar

Figure 19: Evacuation during Cyclone Lehar



The above figure explains that percentage of respondents who evacuated to safer locations due to cyclone Lehar. It was observed that majority of the respondents in both the states did not evacuate. It was observed that 3 percent in Odisha and 26 percent in Andhra Pradesh evacuated to safer locations as a result of cyclone Helen.

### 7.3.3. Evacuation during Cyclone Lehar, place evacuated to, Scheme under which shelter constructed and reason for evacuation

Table-50: Evacuation during Cyclone Lehar, place evacuated to, Scheme under which shelter constructed and reason for evacuation

Evacuation during Cyclone Lehar			Odisha	Andhra Pradesh
			%	%
Yes (those evacuated)			3	26
Place evacuated	Cyclone shelter		1	16
	MPCS constructed under NCRMP or Other Scheme.	Not aware of scheme/ Don't know	-	12
		NCRMP / Govt. / OSDMA	1	13
		Panchayat Raj	-	1
	Govt. Building (including Schools)		1	9
	Other family/friend's permanent structure		1	1
Reason for Evacuation	Kuttcha House		2	4
	Pucca House- low plinth height		-	8
	Close to coast		-	11
	Flood		1	3
No			97	74
Base			1000	720

It can be observed from the table above that among the 3 percent respondents who evacuated one percent of them were evacuated to a Cyclone shelter, and it was further observed that one percent of the respondents who stayed in the cyclone shelter mentioned that it was constructed under the NCRMP scheme. Similarly for Andhra Pradesh, it was observed that 16 percent of the respondents evacuated to cyclone shelters and 13 percent of the respondents who stayed in the cyclone shelter responded that it was constructed by NCRMP. It was also observed that respondents evacuated to government buildings, and other permanent structures.

Two percent of the respondents evacuated as they were living in Kuttcha houses in Odisha, while in Andhra Pradesh it was observed that 11 percent close to the coast and 8 percent lived in pucca but low plinth heighted houses.

### 8.1 Project Development objective Indicators – Odisha

**Table – 51: Project Development objective Indicators – Odisha**

	Baseline - 22 <sup>nd</sup> June 2010	Mid term - March 2014
Proportion of the targeted coastal population covered by comprehensive early warning dissemination system (EWDs)	<ul style="list-style-type: none"> <li>➤ There was no comprehensive EWDs</li> <li>➤ Nil</li> </ul>	<ul style="list-style-type: none"> <li>➤ Component A of NCRMP on EWDS is under implementation</li> </ul>
Proportion of targeted coastal population having access to emergency shelters	<ul style="list-style-type: none"> <li>➤ Existing shelters those fit for use have been considered</li> <li>➤ 40% of the coastal population</li> </ul>	<ul style="list-style-type: none"> <li>➤ 90% of the coastal population</li> </ul>
Proportion of emergency shelters having capacity to shelter animals	<ul style="list-style-type: none"> <li>➤ Existing shelters those fit for use have been considered</li> <li>➤ 25%</li> </ul>	<ul style="list-style-type: none"> <li>➤ 61% of the coastal population</li> </ul>
Percentage of coastal population protected by embankment	<ul style="list-style-type: none"> <li>➤ The existing embankments have been taken into consideration</li> <li>➤ 37%</li> </ul>	<ul style="list-style-type: none"> <li>➤ Work is going</li> <li>➤ 50%</li> </ul>
Roads to MPCs	<ul style="list-style-type: none"> <li>➤ 25%</li> </ul>	<ul style="list-style-type: none"> <li>➤ 33%</li> </ul>
Roads to Villages	<ul style="list-style-type: none"> <li>➤ 45%</li> </ul>	<ul style="list-style-type: none"> <li>➤ 90%</li> </ul>
Proportion of persons trained in use of early warning and evacuation	<ul style="list-style-type: none"> <li>➤ Nil</li> </ul>	<ul style="list-style-type: none"> <li>➤ Nil</li> </ul>
Proportion of persons trained on specific disaster	<ul style="list-style-type: none"> <li>➤ Nil</li> </ul>	<ul style="list-style-type: none"> <li>➤ Nil</li> </ul>

## 8.2. Project Development objective Indicators – Andhra Pradesh

Table – 52: Project Development objective Indicators – Andhra Pradesh

	Baseline - 22 <sup>nd</sup> June 2010	Mid term - March 2014
Proportion of the targeted coastal population covered by comprehensive early warning dissemination system (EWDs)	<ul style="list-style-type: none"> <li>➤ There was no comprehensive EWDs</li> <li>➤ Nil</li> </ul>	<ul style="list-style-type: none"> <li>➤ Component A of NCRMP on EWDS is under implementation</li> </ul>
Proportion of targeted coastal population having access to emergency shelters	<ul style="list-style-type: none"> <li>➤ Existing shelters those fit for use have been considered</li> <li>➤ 35% of the coastal population</li> </ul>	<ul style="list-style-type: none"> <li>➤ 67% of the coastal population</li> </ul>
Proportion of emergency shelters having capacity to shelter animals	<ul style="list-style-type: none"> <li>➤ Existing shelters those fit for use have been considered</li> <li>➤ 4%</li> </ul>	<ul style="list-style-type: none"> <li>➤ 38% of the coastal population in NCRMP villages</li> </ul>
Percentage of coastal population protected by embankment	<ul style="list-style-type: none"> <li>➤ The existing embankments have been taken into consideration</li> <li>➤ 20%</li> </ul>	<ul style="list-style-type: none"> <li>➤ Construction of embankments underway under NCRMP</li> <li>➤ 25%</li> </ul>
Roads to MPCs	<ul style="list-style-type: none"> <li>➤ 53%</li> </ul>	<ul style="list-style-type: none"> <li>➤ 65%</li> </ul>
Roads to Villages	<ul style="list-style-type: none"> <li>➤ 56%</li> </ul>	<ul style="list-style-type: none"> <li>➤ 84%</li> </ul>
Villages connected through bridges	<ul style="list-style-type: none"> <li>➤ 23%</li> </ul>	<ul style="list-style-type: none"> <li>➤ 30%</li> </ul>
Proportion of persons trained in use of early warning and evacuation	<ul style="list-style-type: none"> <li>➤ Nil</li> </ul>	<ul style="list-style-type: none"> <li>➤ Nil</li> </ul>
Proportion of persons trained on specific disaster	<ul style="list-style-type: none"> <li>➤ Nil</li> </ul>	<ul style="list-style-type: none"> <li>➤ Nil</li> </ul>

### 8.3. Intermediate Results Indicators - NCRMP

**Table – 53: Intermediate Results Indicators - NCRMP**

Cyclone Shelter	Stage	Odisha	Andhra Pradesh
No. of Cyclone Shelters completed under the Project	Baseline	Nil	
	Mid-term	21 completed 39 nearing completion	13 completed
No. of Cyclone Shelters Management Committee constituted	Baseline	Nil	
	Mid-term	141	138
No. of Shelter handed over to CSMC	Mid-term	29	2
Roads to Villages (No./KM of roads completed under the project)	Baseline	Not yet begun	Nil
	Mid-term		125 (212.74 Km)
Bridges (Constructed under the project)	Baseline		Nil
	Mid-term		11
Roads to MPCs (No./KM of roads completed under the project)	Baseline	Nil	
	Mid-term	29 works (22.85 Km)	92 works (113.84 Km)
Embankments under NCRMP	Baseline	Existing Embankments have been taken in consideration	
	Mid-term	Construction of embankments underway under NCRMP	