



# Review of West Bengal State Adaptation Policies, Indian Bengal Delta WT6.1.2



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Titles in this series are intended to share initial findings and lessons from research studies commissioned by the program. Papers are intended to foster exchange and dialogue within science and policy circles concerned with climate change adaptation in vulnerability hotspots. As an interim output of the DECCMA project, they have not undergone an external review process. Opinions stated are those of the author(s) and do not necessarily reflect the policies or opinions of IDRC, DFID, or partners. Feedback is welcomed as a means to strengthen these works: some may later be revised for peer-reviewed publication.

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## ACRONYMS

APL - Above Poverty Line

AR4 - Fourth Assessment Report

BPL - Below Poverty Line

CC - Climate Change

CCA - Climate Change Adaptation

CBO - Community Based Organisation

DECCMA - DELtas, vulnerability and Climate Change: Migration and Adaptation

DMP - Disaster Management Plan

DDMP - District Disaster Management Plan

DR - Development Report

DRR - Disaster Risk Reduction

ECCC - Executive Committee on Climate Change

EIA - Environment Impact Assessment

EPA - Environment Protection Act

EWS - Early Warning System

GHG - Green House Gas

GoI - Government of India

GoWB - Government of West Bengal

GS - Gram Sabha

HDR - Human Development Report

IBD - Indian Bengal Delta

ICZMP - Integrated Coastal Zone Management Plan

INDC - Intended Nationally Determined Contributions

IPCC - Intergovernmental Panel on Climate Change

ILO - International Labour Organisation

INR - Indian Rupee

KL - Kilo Litres

MGNREGA - Mahatma Gandhi National Rural Employment Guarantee Act  
MGNREGS - Mahatma Gandhi National Rural Employment Guarantee Scheme  
MoEFCC - Ministry of Environment, Forest and Climate Change  
MoRD - Ministry of Rural Development  
MSP - Minimum Support Price  
MT - Million Tonnes  
NAPCC - National Action Plan for Climate Change  
NC - National Communications  
NDMA - National Disaster Management Authority  
NEP - National Environment Policy  
NGO - Non Governmental Organisation  
NITI Aayog - National Institution for Transforming India  
N 24 P - North 24 Parganas  
PHED - Public Health Engineering Department  
PPP - Public Private Partnership  
SCCAP - State Climate Change Action Plan  
SAPCC - State Action Plan on Climate Change, West Bengal  
SAD - Sundarban Affairs Department  
SD - Sustainable Development  
SDB - Sundarban Development Board  
SDMA - State Disaster Management Authority  
SLR - Sea Level Rise  
S 24 P - South 24 Parganas  
UNFCCC - United Nations Framework Convention on Climate Change  
WB - West Bengal

## CHRONOLOGICAL EVENTS

### NATIONAL:

- 1972 - Stockholm Declaration to conserve and protect Human Environment in India
- 1974 - Water (Prevention & Control of Pollution) Act
- 1980 - Forest (Conservation) Act
- 1985 - Ministry of Environment and Forest (MoEF)
- 1986 - Environment Protection Act (EPA)
- 1987 - Indian Fisheries Act
- 1988 - Intergovernmental Panel on Climate Change (IPCC)
- 1991 - Coastal Regulation Zone Notification
- 1991 - Deep Sea Fishing Policy
- 1992 - United Nations Framework Convention on Climate Change (UNFCCC)
- 1994 - Environmental Impact Assessment Notification
- 1995 - National Environment Tribunal Act
- 2004 - India's First NC to UNFCCC
- 2006 - National Environment Policy (NEP)
- 2006 - The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act
- 2008 - National Action Plan for Climate Change (NAPCC)
- 2012 - India's Second NC to UNFCCC
- 2012-2017 - India's 12<sup>th</sup> Five Year Plan
- 2014 - Ministry of Environment, Forest and Climate Change (MoEFCC)
- 2015 - NITI Aayog
- 2015 – Submission of Intended Nationally Determined Contributions (INDC) to UNFCCC

## CHRONOLOGICAL EVENTS

### State of WEST BENGAL:

- 1956 - The West Bengal Protected Forest Rules (WBPFR)
- 1979 - The West Bengal Town and Country (Planning and Development) Act (WB T&C A)
- 1985 - West Bengal Inland Fisheries Rules (WBIFR)
- 1995 - West Bengal Marine Fishing Regulation Rules (WBMFRR)
- 2001-2002 - Integrated Coastal Zone Management Plan (ICZMP) for West Bengal
- 2007 - West Bengal Trees (Protection and Conservation in Non-Forest Areas) Rules (WBTR)
- 2009 - State Agricultural Plan for West Bengal (SAPWB)
- 2009 - Human Development Report, South 24 Parganas (HDR, S24P)
- 2010 - West Bengal Development Report (WBDR)
- 2011 - West Bengal State Water Policy (WBSWP)
- 2012 - West Bengal State Action Plan on Climate Change (WBSAPCC)
- 2012 - Landuse and Development Control Plan (LuDCP)
- 2012 - West Bengal Wetlands and Water Bodies Conservation Policy (WBWWCP)
- 2012 - Policy on Cogeneration and Generation of Electricity from Renewable Sources of Energy (PCGERSE)
- 2012-2013 - West Bengal State Disaster Management Policy & Frame Work (WBSDMPFW)
- 2014 - District Disaster Management Plan, North 24 Parganas, IBD, West Bengal
- 2014 - District Disaster Management Plan, South 24 Parganas, IBD, West Bengal

## 1.0 Introduction

### a. Aims of the Report:

The present report aims to identify, catalogue and evaluate the relevant existing State Government Policy/Plan documents on Climate Change Adaptation and related sectors (viz. Disaster Management, Agriculture, Water Resources, Forestry, Fisheries, Health, Energy, Rural Electrification, Poverty Alleviation, and Women Empowerment) in Indian Bengal Delta (IBD), in order to identify Government (State/*Sundarbans* Sector) Adaptation Responses to Climate Change variability, extremes and Climate Change induced threats to the population, in these islands.

### b. Discussion of why Climate Change Adaptation Policies is of relevance in the Delta:

*Sundarbans* Delta is the Indian part of great Ganga-Brahmaputra -Meghna (GBM) Delta or popularly known as the “Mega-Delta” (Nicholls, R.J., et.al, 2007). The region is located in the south of West Bengal, at the mouth of the River Ganges bordering the northern coast of Bay of Bengal. The Delta comprises of 104 islands (some of which are facing submergence), interspersed with tributaries and distributaries of River Ganges. The region is dominated by diurnal tidal influxes and the endemic vegetation of Mangroves. It supports a population of about 4.5 million and often has intense Tropical Cyclones and Storm Surges.

Among the Asian Mega Deltas, GBM Delta host the highest population density (viz. 500 people/kilometer<sup>2</sup>) and is identified as most vulnerable (Nicholls, R.J., et.al, 2007) with a frequent to accelerated risk of climate change induced impacts (viz. tropical cyclones, storm surges, land subsidence, SLR, coastal erosion, coastal inundation). The potential impacts of climate change on the low lying coastal areas are often associated with the risk of exposure and threat to the inhabited population. The world’s most populous delta are variably located (viz. countries like India, Ghana and Bangladesh) categorized under Lower-Middle Income Groups (LMI-G) and Lower Income Groups (LI-G) respectively (World Economic Situation and Prospects, 2015). In the Delta region, the significant loss of life, livelihood and impact on infrastructure from climate change induced risks of tropical cyclones, storm surges, coastal inundation and land erosions are projected to increase with future Climate Change (Lwasa Shuaib, 2014).

In the DECCMA context, a ‘*Policy*’ is identified as a set of guidance for addressing public issues and concerns, while, a ‘*Plan*’ is regarded as a framework or outline to achieve the policy goals in practice. The scope of Adaptation Policy Review relevant to CC and allied sectors in the IBD are not an option but an imperative, since most of the economic sectors in India are still driven by Climate (viz. Agriculture, Water Resources, Forests, Fisheries (both freshwater and marine), which in turn are likely to affect the livelihoods depend on these sectors.

India’s representation by its Prime Minister, in the first UN Conference on Human Environment and Development in Stockholm, Sweden in 1972, shows evidence of India’s commitment to address the issue of Conservation and Protection of Human Environment, internationally. Later several laws were



enacted (viz. the Wildlife (Protection) Act, 1972; Water (Prevention and Control of Pollution) Act, 1974; the Water (Prevention and Control of Pollution) Cess Act, 1977; the Forest (Conservation) Act, 1980; the Air (Prevention and Control of Pollution) Act, 1981; the Environment (Protection) Act, 1986; Public Liability Insurance Act, 1991; Coastal Regulation Zone Notification, 1991; the National Environment Tribunal Act, 1995; the National Environment Appellate Authority Act, 1997; Forests Rights Act, 2006 and National Environment Policy, 2006) to safeguard the country's natural resources from the threats of misuse and over exploitation, besides securing them for future needs (Agarwal V K, 2005).

The IPCC-AR4 in 2007 mentioned the threat of increasing Vulnerability (both physical and socio-economic) of the low lying coastal areas in Low-Middle Income & Low Income Countries, including India, to severe climate change induced impact, which is being accelerated due to the ever increasing human population growth and anthropogenic activities. Further, Indices (showing Income group, Rank, Trend and Score) have also been prepared listing the countries, vulnerable (from least to high concern) to climate change impacts, across the world (<http://index.gain.org/ranking/vulnerability>).

India, being a signatory of UNFCCC, *"in accordance with the principle of common but differentiated responsibilities and respective capabilities"*, decided to launch NAPCC in 2008. NAPCC presents a framework to address the issues of Climate Change in India through a process of Adaptation and GHG Mitigation, while ensuring Sustainable Development and high economic growth rate of the country. The action plan outlines a National strategy to "Adapt to Climate Change" and "further enhance Ecological Sustainability", as will best suit with affordable low-cost technologies. The Plan identified eight National Missions (viz. 1) National Solar Mission, 2) National Mission for Enhanced Energy Efficiency, 3) National Mission on Sustainable Habitat, 4) National Water Mission, 5) National Mission for Sustaining the Himalayan Ecosystem, 6) National Mission for a Green India, 7) National Mission for a Sustainable Agriculture and 8) National Mission on Strategic Knowledge for Climate Change) (NAPCC, 2008). And subsequently four new National Missions (viz. Wind Energy, Health, Coastal Areas and Waste to Energy) were added in 2014.

Under the guidelines of NAPCC, every state of the country is directed to formulate a SCCAP, in order to address specific CC concerns. In case of IBD, the plan formulated under the State Government of West Bengal is supposed to be followed. The State of West Bengal launched its Climate Change Action Plan in two phases, firstly, during 2011 with six different sectors (viz. Agriculture, Water Resources, Biodiversity and Forest, Human Health, Habitat and Energy), while the second report published during the year 2012, has two additional sectors, identified as most vulnerable, namely, Sundarbans at its coastal southern end, and Himalayan Darjeeling Region (WBSAPCC, 2012).

Very recently, the Govt. of India, has submitted its INDC to UNFCCC (on October 2<sup>nd</sup>, 2015), to reduce the Emission Intensity of its GDP by 33 to 35 Per Cent by 2030 from 2005 Level, with a primary focus on adaptation, mobilization of finance, technology transfer and capacity building, besides, encouraging sustainable lifestyle, cleaner economic development, reduction of emission intensity, increasing the share of non-fossil fuel electricity and increasing carbon sink. The plan majorly outlines

the list of climate actions to be undertaken during post-2020, under the new international agreement. Moreover, India has voluntarily set up its own National Adaptation Fund, with an initial allocation of INR 3, 500 million (USD 55.6 million) to combat the adaptation needs in key sectors identified (<http://pib.nic.in/newsite/PrintRelease.aspx?relid=128403>).

This assessment report is an attempt to document the scope and type of the existing Policies/Plans on Climate Change Adaptation and their related sectors viz. Disaster Management, Agriculture, Water Resources, Forestry, Fisheries, Health, Energy, Rural Electrification, Poverty Alleviation, and Women Empowerment - in the River Delta. Moreover, the report would serve as a reference point to the existing Government Policy/Plan options, whether addressing Autonomous or Planned Adaptations, in the region. The document also takes into consideration the Government Adaptation Policies/Plans, which address the phenomenon of human migration. This policy review report would contribute to the work of Researchers, Educationists, Policy Makers, Government Authorities, NGO's/CBO's, Donors and others, interest or influence groups among the stakeholders.

### **c. Discussion on why Gender and Migration are important Policy contexts in the Delta:**

Ensuring all round sustainability implies putting the rights of all people at the centre of the country's development (Castaneda I., Aguilar C. & Rand A., 2012).

The impact of any disaster, irrespective of whether climate change induced or otherwise, have different effects on the lives of men and women, in the community. Environmentalists and social scientists have often commented on the involvement of women and their experience in understanding nature and preparedness to natural events. However, during a disaster, women, children and elderly are identified as the most vulnerable sections of the community. It is expected that legislations, climate change action plans and the related policy documents should clearly define the protection of rights, and scope of providing basic amenities to vulnerable sections of the community including women and girls, during any climate change induced disaster.

In the present paper, we are examining Gender equality and women's empowerment vis-a-vis women and girls' position, their role and involvement, and the scope of their rights - information, accessibility, decision making in the varied activities pertaining to Environment and Climate Change scenarios.

Migration viz. planned/autonomous and Displacement of human population, triggered by climate change induced impacts in the low lying coastal areas, has been witnessed more significantly during past three decades (mid 1980s onward). In spite of International Policies/Bindings or National Legal Framework/Policies, no identification or definition is provided for the Climate Change driven "Migrants" or "Refugees" or "Evacuees".

"Temporary migration as an adaptive response to climate stress is already apparent in many areas" (Brown Oli, 2008). Refugees and migrants as a result of climate change induced impacts in developing countries like India impose an increased demand on land. The inequalities and the crisis would

continue to magnify at a larger and complex scenario with every new event of coastal land erosions and land submergence. Therefore, there is a serious need and potential scope within our Policy context, for considering the alternatives and the preparedness of the State to allocate funds and accommodate the landless population due to severe impacts of CC.

**d. Outline of the Report:**

The scope of the present search of the relevant Government Policies/Plans and strategies to CCA in IBD is based on the information available in the public domain (viz. web sites/portal/hard copy reports). Plans/Policies pertaining to Climate Change and the related sectors viz. DRR, Agriculture, Fisheries, Forestry, Flood/Flood Risk Management, Water Resources Management, Coastal Zone Management, Urban Planning, Rural development, Poverty Alleviation and Gender, have been majorly emphasised upon. The review of State Policies/Plans for IBD has considered the time frame of nearly six decades i.e. from 1956 to 2014, for each of the above mentioned sectors.

Challenges were faced in identifying the relevant Government Policy/Plans and strategies addressing the issues of climate change induced impacts and related sectors, from that of the other factors (viz. social, economic & political). Identifying the revised/amended, Policies/Plans and their content analysis was thought to be worth undertaking. Based on that, the present list of search includes 22 entries of the relevant West Bengal State Government's Policy/Plans to CCA and allied *Sundarbans* Sector, which is referred as IBD in the document.

The Review Matrix (Annexure: Table-1) indicates the search of relevant State Government Policies/Plans under clear heads viz. Sectoral Development Policies, Resource Management Policies and Cross Cutting Policies. The various sectors taken into consideration under the above mentioned heads, are as follows; 1) Climate Change, 2) DRR, 3) Agriculture, 4) Fisheries, 5) Forestry, 6) Flood /Flood Risk Management, 7) Water Resources Management, 8) Coastal Zone Management, 9) Urban Planning, 10) Rural development, 11) Poverty Alleviation and 12) Gender.

Section 2.0 of the document shows the review methodology of the different Policies/Plans for the state of West Bengal, relevant to IBD. While Section 3.0 represents the data and its analysis, under four sub-heads viz. Discussion, Content Analysis, Key Themes Emerging and Gender Analysis. Section 4.0 deals with Discussion of the review, focusing on the comparison with the wider literature, policy gaps and future opportunities of the Policies/Plans; and the last section deals with the Conclusion.

The present policy review helps develop the knowledge base and enable better interpretation or provide a summary of the Government of West Bengal's approach to the Climate Change Adaptation in the delta region.

## 2.0 Methodology

### a. Country Context

The Report is a critical assessment of the existing relevant State Government Policy/Plan and strategy Documents on Climate Change Adaptation and related sectors (viz. Disaster Management, Agriculture, Water Resources, Forestry, Fisheries, Health, Energy, Poverty Alleviation, and Women Empowerment) in IBD.

### b. Method applied

The present report is based on the review of the WB State Government Policies/Plans from secondary sources. The data on existing relevant Plans/Policies specific for IBD is collected from the government web sites/portal. The reference links of each of the entries are provided in the list.

The method involves scrutiny of the relevant Policies/Plans at different stages on the basis of the count/appearance of the key words and also the mention of various Adaptation options in the identified related sectors as mentioned above.

The current database of the State Government Policies/Plans relevant to Climate Change consists of four tabular representations, viz. Table 1 - Index (Policy/Plan Name, Implementer, Implementation Date, Period and Source), Table 2 - Content Analysis of the Adaptation options on the basis of the appearance/counts of 11 key terms/words (viz. Adapt, Cope, Thrive, Transform, Adjust, Risk, Vulnerability or vulnerable, Resilience or resilient, Robust, Bounce back and Capacity) in the document, in relation to one or more stressors (viz. Climate, Weather, Variability, Hazard, Floods, Drought, Sea-level rise, Salinisation and Cyclones), Table 3 - Thematic Analysis of the Delta specific Adaptation options in the document, which were not discarded during the scrutiny in the previous stage and Table 4 - Detailed description of the Adaptation options in the Policy Document including direct quotes along with page number. (see Tables below).

**Table 1.1 showing format for Index**

Sl. No.	Name	Department	Date	Period	Source

**Table 1.2 showing format for Content Analysis**

Sl. No.	Documents	
	Key Terms (Count)	
1.	Adapt	
2.	Cope	
3.	Thrive	
4.	Transform	
5.	Adjust	
6.	Risk	
7.	Vulnerability or vulnerable	
8.	Resilience or resilient	
9.	Robust	

10.	Bounce back	
11.	Capacity	

**Table 1.3 showing format for Thematic Analysis**

Sl. No.	Documents	
	Summary of Adaptation Policy/Plan options	

**Table 1.4 showing format for detail description of Adaptation options**

Sl. No.	Documents	
	Detail description of Adaptation Policy/Plan options (direct quote)	

The cataloguing of the entries is been done in a given Word Matrix Format at the Delta Level for IBD.

### 3.0 Data and Analysis

#### a. Discussion of Policy Documents

The total search list of the WB State Government Policies/Plans includes 22 entries, depending on the relevance of the Adaptation options to CC induced impacts and related sectors, as mentioned earlier in the document. The number of State Government Plan Documents on the review list is nine, apart from five State Government Policy Documents; besides, eight documents on different Rules Acts and Reports have been taken into consideration. The following table is showing the list of different documents searched under the three broad heads mentioned above,

**Table 2: Showing the total list of documents searched under State Policies/Plans/Rules, Acts & Reports**

Sl. No.	Total Searched List of Documents	Total number of Entries (22)	Names of the Documents
1.	State Government Plans	09	<ol style="list-style-type: none"> <li>1. WBSAPCC</li> <li>2. DDMP-North 24 Parganas</li> <li>3. DDMP-South 24 Parganas</li> <li>4. DMP of Animal Resources Development - North 24 Parganas</li> <li>5. DMP of District Forest Dept. - North 24 Parganas</li> <li>6. DMP of District Controller Food &amp; Supplies - North 24 Parganas</li> <li>7. WB State Agricultural Plan</li> <li>8. WB-ICZMP</li> <li>9. Landuse &amp; Development Control Plan</li> </ol>
2.	State Government Policies	05	<ol style="list-style-type: none"> <li>1. WB State Disaster Management Policy &amp; Framework</li> <li>2. WB State Water Policy</li> <li>3. WB Wetlands and Water Bodies Conservation Policy</li> <li>4. Policy on Cogeneration and Generation of Electricity from Renewable Sources of Energy</li> <li>5. WB State Policy for Empowerment of Women</li> </ol>
3.	State Government Rules, Acts and Reports	08	<ol style="list-style-type: none"> <li>1. WB Inland Fisheries Rules</li> <li>2. WB Marine Fishing Regulation Rules</li> <li>3. The WB Protected Forest Rules</li> <li>4. WB Trees Rules</li> <li>5. WB Town &amp; Country Planning Act</li> <li>6. HDR-South 24 Parganas,</li> <li>7. WB Development Report</li> </ol>

			8. The Genesis and performance in West Bengal
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The review list contains WB State Government Policies/Plans formulated between the periods of 1985-2015. These Policies/Plans cut across a varied range of sectors (viz. Climate Change and its Impacts, Agriculture, Water, Fisheries (Inland & Marine), DM, Forests, Trees Protection in Non-Forest areas, Coastal Zone Management, Town & Country Planning, Landuse, Wetlands and Water Bodies, Development Report, Renewable Energy, Rural Employment Generation, and Women Empowerment).

It will be worth mentioning, that, the State of West Bengal prepared its first integrated plan to combat CC phenomenon and its impact in 2011, while, the *Sundarbans* (IBD), identified as one of the most Vulnerable to CC, finds its place as a separate sector in the second phase of the document in 2012. The same year marks the formulation of a few other policies related to Climate and allied sectors under GoWB (viz. WB-Wetlands and Water Bodies Conservation Policy, Policy on Cogeneration and Generation of Electricity from Renewable Sources of Energy and WB-State Disaster Management Policy & Frame work).

### b. Content Analysis

In the present document, Content Analysis of the Adaptation options is carried out on the basis of the appearance/counts of 11 key terms/words (viz. Adapt, Cope, Thrive, Transform, Adjust, Risk, Vulnerability or vulnerable, Resilience or resilient, Robust, Bounce back and Capacity) in relation to one or more stressors (viz. Climate, Weather, Variability, Hazard, Floods, Drought, Sea-level rise, Salinisation and Cyclones). Fourteen State Government Policy/Plan documents (viz. WB-SAPCC, WB-SDMP&F, DDMP-North 24 Parganas, DDMP-South 24 Parganas, State Agricultural Plan for WB, WB Tree Rules, WB State Water Policy, ICZMP for WB, WB-W&WBCP, HDR-South 24 Parganas, Policy on Cogeneration and Generation of Electricity from Renewable Sources of Energy, WBDR, The Genesis and performance in West Bengal in MGNREGS and West Bengal State Policy for Empowerment of Women) out of the total list of 22 are observed to have at least one or more related key terms, while in rest of the eight documents (viz. DMP of District Controller, Food & Supplies, North 24 Parganas; DMP of District Forest Department, North 24 Parganas; DMP of Animal Resources Department, North 24 Parganas; WB Inland Fisheries Rules; West Bengal Marine Fishing Regulation Rules; The West Bengal Protected Forest Rules; WB T&C Act and Landuse & Development Control Plan) the key words count is nil.

Among the 14 documents, WBSAPCC shows highest variance in use of seven different key terms, followed by ICZMP for WB and WBDR, containing six different key words at the counts of their appearance. The numbers of documents which are considered and have at least one of the Key words are, HDR South 24 Parganas, Policy on Cogeneration Generation of Electricity from Renewable Sources of Energy and WB State Policy for Empowerment of Women. The following tables are showing the exact number of key terms as per their appearances (highest to lowest variance) in the documents,

**Table 3a: Showing the highest variances of the key terms in the documents searched under State Policies/Plans/Rules, Acts & Reports**

Documents Key Terms	WBSAPCC (2012)	ICZMP for WB (2001-2002)	WBDR (2010)
Adapt	14	01	-
Cope	02	03	03
Thrive	01	12	-
Transform	-	-	01
Risk	22	10	07
Vulnerable/Vulnerability	30	01	10
Resilience/Resilient	06	-	-
Robust	-	-	03
Capacity	21	101	21

**Table 3b: Showing the lowest variances of the key terms in the documents searched under State Policies/Plans/Rules, Acts & Reports**

Documents Key Terms	H D R, South 24 Parganas, 2009	PCGERSE, 2012	West Bengal State Policy for Empowerment of Women
Vulnerable/Vulnerability	-	-	01
Capacity	01	07	-

The scrutiny of the documents, at this stage of review excluded those Policies/Plans which do not contain any of the related key terms/words. Therefore, 14 out of 22 relevant State Government Policy/Plan documents have been considered for the next stage of review and analysis.

### c. Key Themes Emerging

This stage of review focuses on the diverse Adaptation options under various sectors mentioned in the relevant State Government Policies/Plans, scrutinised during the previous stage. The search includes nine broad key relevant sectors, which has identified Adaptation options (viz. Sustainable Agriculture, Water Resource Management, Coastal Zone Management, Disaster Preparedness & Response, Capacity Building and Farmer's Security, Women Empowerment, Efficient Use of Energy, Infrastructure Development and Health Care facilities).

A total of 11, out of the 14 documents in the Table 3 (in the Annexure) show at least one or more evidences of the identified Adaptation options.

Practising Sustainable Agriculture, in order to combat the impacts of CC, besides ensuring Food Security to the community is anticipated in response to the changing forms of soil, water and temperature. WBSAPCC 2012, suggested adoption of the Indigenous or traditional rice varieties tolerant to salinity and flood, to fight adverse impacts of Climate Change. The age old traditional Farmer's variety of seeds of agricultural crops are proved to be more climate change resilient i.e. less affected during flood, saline contamination and drought etc.; switching back and/or opting for traditional indigenous seeds would certainly ensure secured food supply and help build community resilience against future climate change induced impacts. At the same time, introducing Integrated Farming System with the combination of crops, fisheries and livestock, the document pointed out, would ensure self-sustainability and livelihood alternatives. The Plan also shows initiative towards Multi-tier Cropping System to ensure more returns in terms per unit area of land and time, for food and nutrition security, apart from providing assistance for



marketability of the crop produced by the small and marginal farmer to MSP. Brackish water canal fisheries in the 14 Blocks of South 24 Parganas (viz. Sagar, Patharpratima, Kakdwip, Namkhana, Mathurapur I-II, Kultali, Joynagar II, Canning I-II, Basanti, Gosaba, Bhangore II and Kulpi - of these 12 belongs to IBD), are also encouraged in order to safeguard livelihoods of the coastal fishers.

Water Development Projects have been aimed to design as Multi-purpose projects in WBSWP (2012) to meet the requirements of drinking, irrigation, flood mitigations etc. It also states the importance of including construction of embankments and dykes for structural measures under Flood Control/Management activities, besides flood forecasting and warning, flood proofing and flood insurance, to ensure minimum losses. There is emphasis on appropriate Water Resource Management through various initiatives like, the surface water harvesting structures to increase the irrigation coverage, encouragement of Rainwater Harvesting for potable water, construction of overhead potable water tanks to avoid contamination, regular monitoring and reconstruction of the breached embankments to avoid contamination (WBSAPCC, op.cit, 2012). The Plan also mentions SDB, the State Government body, which is in charge of Water Resource Management and recommends ensuring water supply through encouraging Rainwater Harvesting Scheme with Land Shaping, besides, and also has the responsibility of the Development of *Sundarbans* (IBD).

PHED made a massive effort of taking up 262 rural piped water supply schemes in the Saline Belt of North 24 Parganas and South 24 Parganas, besides in other two districts (viz, Purba Medinipur & Howrah) of the state. The other initiatives of PHED include, mentions can be made of providing safe drinking water to flood affected areas, and also repairing and restoration of tube wells and pump houses after Cyclone "Aila" in 2009, under Disaster Recovery Services. To combat CC, a similar scheme has been initiated in the *Sundarbans* region (IBD), known as, "Protection and Development of Water Bodies", which includes reclamation, re-excavation and renovation of small ponds with a unit cost of INR 1 lakh/hectare, with a target of a total of 500 hectares by 2020.

Different initiatives has been undertaken for expanding the existing Crop Insurance packages for small and marginal farmer's security against crop (both cereal/plantation) failure in the state (WBSAPCC, 2012).

Adoption of effective Early Warning System (EWS) in IBD has been recommended in the WBSAPCC op.cit, 2012, to ensure preparedness and to take proactive steps in the community to combat the stress of cyclones and storm surges under DRR.

Identification of the boundaries of disaster prone sites, by issuing a "Disaster Declaration", has been identified in WBSDM Policy under WBSDMA, which involves formulation of advance planning for prevention, planning and post disaster restoration, besides, empowering State Relief Commissioner and District Magistrates to ensure disaster response, during the emergency situations. The Policy is aimed at Multi-Hazard Approach to DM, accommodating local conditions, and ensured Multi-Stakeholder (viz. Department of Disaster Management, Government Departments and local authorities, NGOs, Research Agencies, Public Sector, Private Sector and Community Groups) engagement in the disaster hit areas. There is a special focus on the identified vulnerable sections of society (viz. women, elderly and land less

people), besides addressing Gender Issues and Women Empowerment in the long term plan, in a much generalised manner.

Evidence of the post disaster support system can be found through the total list of 160 permanent and makeshift Rescue Shelters (viz. Primary school buildings, Village GP office premises, etc.) without addressing any gender specific needs, in the six districts of Indian *Sundarbans*, identified as “High Risk Multi Hazard Zones”; besides, a list of government go-downs in the area, shall have a rolling reserve of 100 million tonnes of rice from BPL account and 5 million tonnes of Wheat from APL account, apart from the LPG dealers who should have at least one week of rolling reserve stock. These dealers are also expected to have provision of 5 kilo litres of kerosene oil with every oil agent as a Rolling Reserve (The Disaster Management Plan for North 24 Parganas).

The identification of the vulnerable blocks (viz. Gosaba, Basanti, Kultali, Patharpratima, Namkhana, Sagar, Canning I, Mathurapur II, Kakdwip and Joynagar II) in the District has been mentioned in the Disaster Management Plan of South 24 Parganas. The Reserve Stock of Rice to be kept as (100 million tonnes + 100 million tonnes) in both government and hired go-downs for the initial relief to the people in coastal areas, apart from the excess stock of rice and wheat with FCI Authority at Orient Jute Mill, Budge-Budge & Jingirapole. The Plan also includes the guideline of keeping 5 kilo litres of kerosene oil as reserve with the 10 identified agents go-down in the region, apart from the commodities (viz. Mustard Oil, Vegetable Oil, Baby Food, Match Box, Potato, Candle Sticks, Soya bean chunks and Cooking Gas) for relief operation as and when required.

The change in landuse from mangroves cover to agriculture and further to pisciculture, has been clearly pointed out in WB-ICZMP 2001-2002, indicating the change of livelihood/occupation in the various blocks of Indian *Sundarbans* (viz. Minakhan, Hasnabad, Hingalganj and Sandeshkhali-1 (under North 24 Parganas), while, Canning-I & II, Joynagar-I & II, Kultali, Gosaba, Mathurapur-I & II, Sagar, Namkhana, Kakdwip & Patharpratima (under South 24 Parganas). The plan also provides guidelines for mangrove regeneration/plantation on the degraded mud flats and also on the breams of the aquaculture areas in the IBD.

The significance of dissemination of the responsibilities and duties through key stakeholders (viz. Wage seekers, *Gram Sabha*, PRIs, Program officer at the block level, District Program Coordinator, State Government and MoRD) from the region has been emphasised in MGNREGS. It also focuses on identifying the vulnerable groups in the targeted areas, which often suffer from lack of adequate employment opportunities. The MGNREG Act clearly states that, provision should be made for women’s representation at local-level committees, including those from marginal communities, as well as to invoke a Social Audit process, at both state and central level councils. WBSPEW focused on reservation for women by the Government in the field of Self Employment and small entrepreneurship, for ensuring their full participation. During the development process, gender perspective will be introduced in the department by the process of Gender Budgeting (for the women in the rural and marginal communities), which will be taken up later at the Gram Panchayat level of the vulnerable communities.

Reconstruction and retrofitting of the earthen embankments (which pose as a life line in the area) have been taken up as an Adaptation strategy, in the identified vulnerable areas of IBD, through PPP, as per WBSAPCC, op.cit, 2012. This is in addition to the special grant of INR 5, 000 Crores by Planning Commission of India<sup>1</sup> in reconstructing 1300 km damaged embankment after Cyclone “Aila”; because of the non-availability of the land, and only 20% of the work could be achieved. Mangroves regeneration and restoration on the dykes and embankments would ensure natural protection of the islands from cyclones and storm surges acting as bio-shield. HDR 2009, emphasized the overall infrastructure development of the IBD region, like transport, power, irrigation as well as education and health, to ensure integration of local economies into the broader outside market which will help in developing capacity building, besides, opening up new avenues.

Special focus has been made on the development of Adaptation strategies for the existing Health Care System in West Bengal. Attention has been focused on the linkage of vector borne diseases with the impacts of changing climate in the tropical regions (viz. Coastal & Inland) by bridging the existing infrastructure gaps. Efforts have been made to develop a “State Nutrition Policy” in the purview of availability of food grains in the rapid CC scenario, besides, formulation of Health Disaster Risk Reduction Plans to cope with Cyclone and Flood impacts. Focus has been made to replace the fossil burning fuel *chullahs* in the rural households with Bio-gas cylinders to avoid Air Pollution and check the release of carbon in the atmosphere, ensuring efficient use of energy (WBSAPCC, op.cit, 2012).

#### **d. Gender Analysis**

The review of the 22 State Government Policies/Plans of West Bengal pertaining to combat the impacts of CC and the related sectors (viz. Sustainable Agriculture, Water Resource Management, Coastal Zone Management, Disaster Preparedness & Response, Capacity Building and Farmer’s Security, Women Empowerment, Efficient Use of Energy, Infrastructure Development and Health Care facilities), mostly do not show any instances or provide clear guidelines on gendered approach. In fact, on the contrary the documents represent a general approach towards addressing their focal areas of target.

A few of the Government Policies/Plans and Schemes, however, like, WBSPEW & MGNREGS, hint towards women-targeted initiatives focusing on introducing reservation for women in the field of Self Employment and Small Entrepreneurship to cater to the needs of rural and marginal groups, besides creating provision for women representatives in local-level committees, including those from marginal communities, as well as in Social Audit process, at both state and central level councils. Special efforts have been made through WBSDMPF 2012-2013, to make provision for the engagement and empowerment of women, for long term disaster mitigation. In the State Agricultural Plan, instances can be found of a focus on the role of women and other disadvantaged groups in the mainstream development process through capacity building of

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<sup>1</sup> In February 2015, Government of India dissolved 65 years old Planning Commission of India (estd. 1950), to set up NITI Aayog (National Institution for Transforming India) “as a means to better serve the needs and aspirations of the people of India”.

Women's SHGs to prepare value added products (viz. boneless meat, fish pickles, dry fish, fish curry in sachets etc.) and to make them available at the local level, ensuring self-sustenance.

## 4.0 Discussion

### a. Comparison of findings with wider literature on Climate Change Adaptation

The State level documents, including the major Action Plan of 2011 further extended in 2012, do not mention migration-which can be studied as a part of Adaptation or as failure of Adaptation. While, it has been well recorded in the media report and limited empirical studies, the reference to large scale Human Migration of Able-bodied Male in the Post Cyclone “Aila” period of 2009, has never featured in the documents reviewed for the present study. Further, it is now well established that besides, the voluntary migration of individuals, a process of State supported planned migration has already been initiated from the submerging islands of Ghoramara, to the neighbouring larger islands of Sagar in IBD (Mukherjee Baishali, 2014; Ghosh T. et.al, 2014; Ghosh A K, 2014) which calls for critical appraisal. Likewise in the Delta Vision Document (Danda et.al, 2011), for IBD, it has been projected that at least one million people have to move out of the most vulnerable Blocks of *Sundarbans* from 2030 onward with increasing hazards of CC. This study is based on Vulnerability Risk Assessment research by the School of Oceanographic Studies, Jadavpur University. This document has strongly argued that adequate steps should be taken for skill development of prospective migrants for their gainful employment in the wider areas outside IBD.

### b. What is missing from their Country Context in terms of Policy and Content

Analysis of Policies or Plans or Schemes, indicates a lack of integration on addressing gender and other cross cutting issues. The present review also shows that, the documents fail to establish the synergies between different sectors and adaptation options to cope with climate change stress in most of the policies.

Even after 68 years of India’s Independence, the lives and livelihoods of the majority of country’s rural population primarily depends on the climate driven sectors (viz. Agriculture, Water Resources, Forests, Fisheries (viz. fresh water and marine), simultaneously, thriving to cope with the impacts of CC in order to ensure self-sustainability. The country’s National Policy Framework lacks effective policy structure addressing Climate Change Adaptation, both at national and state level.

Some state government documents (viz. WBSAP, 2009) also fail to bring out proper estimated budget allocation in their plan of execution. The plans also fail to indicate the stipulated time of fund release, expected for its implementation, like in WBSAPCC 2012, the *Sundarbans* Sector has the budgetary allocation of INR 1710.00 Crores (US\$ 386 million) under the strategy for “Adaptation Fund” during the 12<sup>th</sup> Five Year Plan. The distribution of the budget is made under the following heads viz. Vulnerability Assessment of the region (INR 1.00 Cr.), Research of Identification of Mangrove Species & their Tolerance Limit (INR 4.00 Cr.), Infrastructure for Sustainable Livelihood (INR 200.00 Cr.), Embankment Construction and Retrofit (INR 1000.00 Cr.), Communications Development (INR 200.00 Cr.), Disaster Preparedness (INR 5.00 Cr.), Rehabilitation and Renovation Package for the Disaster Hit Households on the consequence of Climate Change (INR. 100.00 Cr.) and Construction of Cyclone and Flood Shelters (INR 200.00 Cr.).

However, only INR 5, 000, 000 (US\$ 78600.00) has been disbursed under the respective Government Budget (Source: Pers. Comm. Senior Government Officer, GoWB).

### **c. Opportunities for Policy Development**

The State Government of West Bengal should take into cognizance the existence of research output from Academic Institutions based on empirical studies. It should also try to select appropriate elements for future actions from other coastal states of India, specially known for harbouring large Delta populations, besides from the neighbouring countries of South Asia and beyond facing similar problem.

Further, supporting different Skill Development opportunities (viz. tailoring work, electrical repairing, security guard, plumbing, Computer training, vehicle driving, micro enterprising, etc) for ensuring capacity building of the community appear to exist but has not been sharply focused in the policy documents; some of the skills like cutting, tailoring, stitching and *zari* works along with poultry rearing, developing duckery and goatery, vermin-composting etc. have been noted to be promoted by CBO's through women SHG's; up scaling such operations with state government support are likely to empower the women in IBD, enabling them to secure a better livelihood.

## 5.0 Conclusions

The present review of the West Bengal State Government Policies/Plans and relevant documents pertaining to CC and related 11 sectors (viz. DRR, Agriculture, Fisheries, Forestry, Flood/Flood Risk Management, Water Resources Management, Coastal Zone Management, Urban Planning, Rural development, Poverty Alleviation and Gender), will expectedly help in identification of the adaptation options, and also the gaps in the existing approach. Besides emphasizing commonality in different sectoral approaches, there is an urgent need of integration across relevant issues including cross cutting issues, in the existing Policy/Plans; the links and similarities between adaptations due to CC and large scale Climate Change induced “Human Migration” in the IBD may be studied.

Key findings from the review

- All the three related sectors (viz. sectoral development, resource management and cross sectoral) of policies/plans reviewed indicates several individual and/or departmental activities and outcomes, which are pro climate change adaptation; but this effort has often not been focused with dedicated planning and approach.

Gaps identified in the reviewed State Policies/Plans

- Issues of climate change and its impact as a significant component has not yet been considered/incorporated in the related sectoral policies/plans
- Most of the documents are gender blind
- Cross sectoral policies/plans lack cohesive and comprehensive approach in addressing climate stress issues

It is also noted that only a few of the State Policies/Plans have focused on the need of women’s participation and empowerment for coping with CC, in the long run. The greater acceptability of the need for a gender sensitive and inclusive approach to combat the impacts of CC will provide opportunities for the Government, Community as well as the Policy makers to formulate more integrated and effective measures of policy implementation.

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## 7.0 Annexure

**Table 1: List of State Policies for West Bengal to be included in the Policy Review**

Sl. No.	Name	Department	Date	Period	Source
1.	West Bengal State Action Plan on Climate Change (SAPCC)	Department of Environment, Government of West Bengal	2012	12 <sup>th</sup> Five Year Plan (2012-2017) 13 <sup>th</sup> Five Year Plan (2017-2022)	Electronic <a href="http://www.moef.nic.in/sites/default/files/sapcc/West-Bengal.pdf">http://www.moef.nic.in/sites/default/files/sapcc/West-Bengal.pdf</a>
2.	West Bengal State Disaster Management Policy & Frame Work	Department Of Disaster Management. Government Of West Bengal	2012-2013	Not Specified	Electronic <a href="http://westbengal.gov.in/BanglarMukh/Download?AlfrescoPath=Documents/WhatsNew&amp;FileName=WEST_BENGAL_DISASTER_MANAGEMENT_POLICY.pdf">http://westbengal.gov.in/BanglarMukh/Download?AlfrescoPath=Documents/WhatsNew&amp;FileName=WEST_BENGAL_DISASTER_MANAGEMENT_POLICY.pdf</a>
3.	District Disaster Management Plan, North 24 Parganas	District Disaster Management Department. Government of West Bengal	2014	Not Specified	Electronic <a href="http://north24parganas.gov.in/pdf/FDMP.pdf">http://north24parganas.gov.in/pdf/FDMP.pdf</a>
4.	Disaster Management Plan of District Controller, Food & Supplies, North 24 Parganas	District Disaster Management Department. Government of West Bengal	Not Specified	Not Specified	Electronic <a href="http://north24parganas.gov.in/n24p/civildefence/pdf/Controller_Food_Supplies.pdf">http://north24parganas.gov.in/n24p/civildefence/pdf/Controller_Food_Supplies.pdf</a>
5.	Disaster Management Plan of District Forest Department, North 24 Parganas	District Disaster Management Department. Government of West Bengal	2013-2014	Not Specified	Electronic <a href="http://north24parganas.gov.in/n24p/civildefence/pdf/ddmo_action.pdf">http://north24parganas.gov.in/n24p/civildefence/pdf/ddmo_action.pdf</a>
6.	Disaster Management Plan of Animal Resources Development, North 24 Parganas	District Disaster Management Department. Government of West Bengal	Not Specified	Not Specified	Electronic <a href="http://north24parganas.gov.in/n24p/civildefence/pdf/Animal_Resources_Development.pdf">http://north24parganas.gov.in/n24p/civildefence/pdf/Animal_Resources_Development.pdf</a>
7.	District Disaster Management Plan, South 24 Parganas	District Disaster Management Department. Government of West Bengal	2014	Not Specified	Electronic <a href="http://www.s24pgs.gov.in/s24p/#">http://www.s24pgs.gov.in/s24p/#</a>
8.	State Agriculture Plan for West Bengal	Department of Agriculture. Government of West Bengal	2009	Not Specified	Electronic <a href="http://rkvy.nic.in/sap/wb/wb.pdf">http://rkvy.nic.in/sap/wb/wb.pdf</a>
9.	West Bengal Inland Fisheries Rules	Department of Fisheries. Government of West Bengal	1985	Not Specified	Electronic <a href="http://www.wbfisheries.gov.in/wbfisheries/do/Forwordlink;jsessionid=E44E4F944E7E32DC1D6E8CF45EE64E2A?val=12">http://www.wbfisheries.gov.in/wbfisheries/do/Forwordlink;jsessionid=E44E4F944E7E32DC1D6E8CF45EE64E2A?val=12</a>
10.	West Bengal Marine Fishing Regulation Rules	Department of Fisheries. Government of West Bengal	1995	Not Specified	Electronic <a href="http://www.wbfisheries.gov.in/wbfisheries/do/Forwordlink;jsessionid=E44E4F944E7E32DC1D6E8CF45EE64E2A?val=12">http://www.wbfisheries.gov.in/wbfisheries/do/Forwordlink;jsessionid=E44E4F944E7E32DC1D6E8CF45EE64E2A?val=12</a>

## 7.0 Annexure

**Table 2: Content Analysis through Count of basic terms in State Policy/Plan Documents in West Bengal**

<b>Policy Documents</b> <b>Key Issues</b>	SAPCC, 2012	West Bengal State D M Policy & Frame Work 2012-2013	D D M P, North 24 Parganas, 2014	D M P of District Controller, Food & Supplies, North 24 Parganas	D M P of District Forest Department , North 24 Parganas	D M P of Animal Resources Development , North 24 Parganas	D D M P, South 24 Parganas, 2014	State Agriculture Plan for West Bengal, 2009	West Bengal Inland Fisheries Rules, 1985	West Bengal Marine Fishing Regulation Rules, 1995
Adapt	14	1	-	-	-	-	2	14	-	-
Cope	2	1	-	-	-	-	2	1	-	-
Thrive	1	-	-	-	-	-	-	-	-	-
Transform	-	-	-	-	-	-	-	-	-	-
Adjust	-	-	-	-	-	-	-	-	-	-
Risk	22	25	8	-	-	-	11	13	-	-
Vulnerability or vulnerable	30	10	5	-	-	-	16	3	-	-
Resilience or resilient	6	1	-	-	-	-	-	-	-	-
Robust	-	-	-	-	-	-	-	-	-	-
Bounce back	-	-	-	-	-	-	-	-	-	-
Capacity	21	27	-	-	-	-	2	43	-	-

## 7.0 Annexure

**Table 3: Thematic Analysis of Adaptation policy options promoted by State Policy/Plan Documents in West Bengal**

Summary of Adaptation Policy Option	SAPCC, 2012	West Bengal State D M Policy & Frame Work 2012-2013	D D M P, North 24 Parganas, 2014	D D M P, South 24 Parganas, 2014	State Agriculture Plan for West Bengal, 2009	West Bengal Trees Rules, 2007	West Bengal State Water Policy, 2011	ICZMP for West Bengal, 2001-2002	West Bengal Wetlands and Water Bodies Conservation Policy, 2012
Seasonal Livelihood Diversification	X	-	-	-	-	-	-	X	-
Transport Improvements/Development	-	X	-	-	-	-	-	-	-
In India, there is Moratorium on GM Food Crop	-	-	-	-	-	-	-	-	-
Delta Infrastructure Development	X	-	-	-	-	-	-	-	-
Capacity Building	X	X	X	X	X	-	X	-	-
S H G - Women Emp. & Micro-Insurance for Female Entrepreneurs	X	X	-	-	X	-	-	-	-
Funding for flood-cyclone-multipurpose shelters	X	-	-	-	-	-	-	-	-
Mangrove Rehabilitation and additional Mangrove Afforestation	X	-	-	-	-	-	-	X	-

## 7.0 Annexure

**Table 4: Detailed description of adaptation options promoted by State Policy/Plan Documents in West Bengal**

Summary of adaptation policy option	SAPCC, 2012	West Bengal State D M Policy & Frame Work 2012-2013	D D M P, North 24 Parganas, 2014	D D M P, South 24 Parganas, 2014
Seasonal Livelihood diversification	<ul style="list-style-type: none"> <li>• Popularise Integrated Farming systems to combine crops, livestock and fisheries for a self sustained farming system. (p 18)</li> </ul>	-	-	-
Transport Improvement/Development	-	<ul style="list-style-type: none"> <li>• Creation/retrofitting of structures- including roads, bridges, dams, canals etc. That may have been destroyed / damaged due to the disaster. (p 22)</li> </ul>	-	-
In India, there is Moratorium on GM Food Crop	-	-	-	-
Delta infrastructure development	<ul style="list-style-type: none"> <li>• Construct/retrofit the embankment along the sea as well as along the rivers based on the likely return periods and maximum heights of storm surges that can occur. (p 224)</li> <li>• Strengthen communication-roads and telephony (p 224)</li> </ul>	-	-	-
Capacity building	<ul style="list-style-type: none"> <li>• Integrate climate change in health disaster risk reduction plans for Cyclones, floods and droughts. (p 22)</li> <li>• Therefore, mobilise communities to take action rapidly and cyclone proof themselves when early warnings are surrounded by authorities vis a vis moving people and livestock and their valuables to safer places. (p 224)</li> <li>• Rehabilitation strategies and package for post disaster renovation supported with social services &amp; alternative livelihoods. (p 225)</li> <li>• Develop disaster preparedness to abate disease outbreaks and undertake regular drills. (p 226)</li> <li>• Design the existing houses on stilts based on the level of flood water height likely to be encountered in the future. Also identify safe areas and build cyclone/flood shelters. (p 318)</li> </ul>	<ul style="list-style-type: none"> <li>• To create awareness and preparedness and provide advice and training to the agencies involved in disaster management and to the community. (p 3)</li> <li>• To strengthen the capacities of the community and establish and maintain effective systems for responding to disasters. (p 3)</li> <li>• Development planning will incorporate disaster management principles as an integral part of the overall planning process. (p 4)</li> <li>• Links will be established between the nodal agency, Department of Disaster Management, Government Departments, Local authorities, NGOs, research agencies, public sector, private sector, community groups and other stakeholders to share knowledge, establish coordination mechanisms and other augment capacity of all stakeholders. (p 4)</li> <li>• All Blocks and Districts of the State will develop and maintain documented plans of their disaster management functions and activities. (p 5)</li> <li>• Disaster Management efforts should be sensitive to local customs, beliefs and</li> </ul>	<ul style="list-style-type: none"> <li>• To minimize loss of human lives and property by adopting preparedness measures to effectively handle situations. (p 4)</li> <li>• To make the government and other stakeholder organizations able to get prepared and act in time to manage any disaster in a pro-active pre-planned well coordinated manner. (p 4)</li> </ul>	<ul style="list-style-type: none"> <li>• Development of Crisis management System, so as to ensure quickest possible relief to the disaster affected people to minimize their sufferings and rehabilitating them with optimal utilisation of resources. (p 69)</li> <li>• To maintain proper liaison among the Disaster Managers, Community and Volunteers for achieving the above objectives. (p 69)</li> <li>• We are already put a right step in this direction and also preparing various steps for aware the people by providing live demonstration &amp; display of modern equipments, publicity, teaching classes, evacuation drills, mock drills etc. (p 90)</li> </ul>

		practices and be adapted to local conditions. (p 8) <ul style="list-style-type: none"> <li>• The community and voluntary agencies should undertake rescue and relief measures immediately, to the extent possible, on their own. (p 20)</li> </ul>		
S H G & Micro Credit - Women Emp. - Skill Dev. & Micro-Insurance for Female Entrepreneurs	<ul style="list-style-type: none"> <li>• Policies of the Department of Fisheries- Women Empowerment. (p 76)</li> </ul>	<ul style="list-style-type: none"> <li>• To address gender issues in disaster management with special thrust on empowerment of women towards long term disaster mitigation. (p 4)</li> <li>• Disaster management capacity building will have special thrust on empowering women towards long-term disaster mitigation. (p 13)</li> </ul>	-	-
Funding for flood-cyclone-multipurpose shelters	<ul style="list-style-type: none"> <li>• Rs. 75. 00 Cr (p 318)</li> </ul>	-	-	-
Mangrove rehabilitation& additional Mangrove Afforestation	<ul style="list-style-type: none"> <li>• Protect and extend mangrove cover to enhance nutrient content in brackish water and enhance fish production and safeguard livelihoods of fishermen in the coastal areas. (p 19)</li> </ul>	-	-	-