An Innovative Approach to Preparing a Sub-National Climate Change Action Plan: Case of Orissa State (India)

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Orissa: Background

Rich in mineral resources
- Coal – 26%
- Iron ore – 24%
- Bauxite – 70%
- Nickel – 95%
- Chromium – 98%

Forest Land – 38%

Green Cover – 34%

Long Coastline – 480 kms.

Large % of population living below poverty line

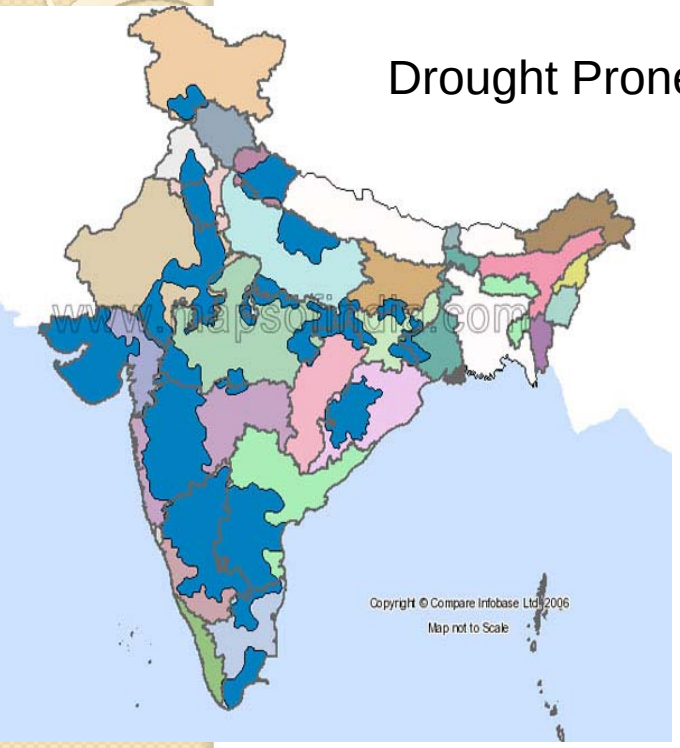
Population: 36 Million, Area 155,707 sq km
(area of Greece with population of Poland)

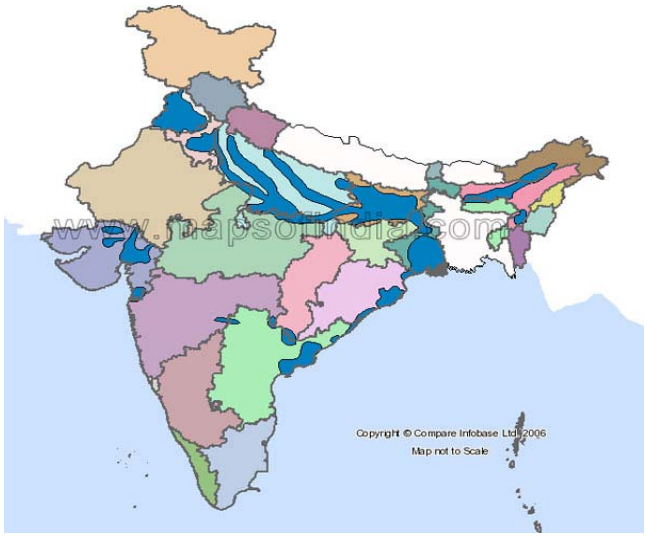
Orissa and Climate Change

- 480 km coast line that is subject to climate-mediated cyclones and coastal erosion.
- Over 85% of the state's population depends on climate sensitive sectors for livelihood such as agriculture, forestry, and fisheries.
- Almost 60% of land is devoted to rain fed agriculture and with a water-dependent crop, rice, as its main crop.
- Over 80% of annual rainfall occurs during the monsoon period, with an average of only 70 rainy days and this is shrinking.
- The state experiences either heavy flood or drought every alternate year due to disproportionate distribution of rainfall.
- Food insecurity and the state has been placed in the category of "severely food insecure" regions.
- The prevalence of the malaria, the vector-borne disease, is already rampant. (50% of malarial deaths in the country).
- Overwhelming forest dependence. Sizeable population dependent on forest resources and therefore increased pressure on forest resources.
- Potential for mineral based industries and power plants. Steel, Aluminum, Cement, and Power Plants (thermal power capacity being enhanced from 2,800mw to 60,000 mw

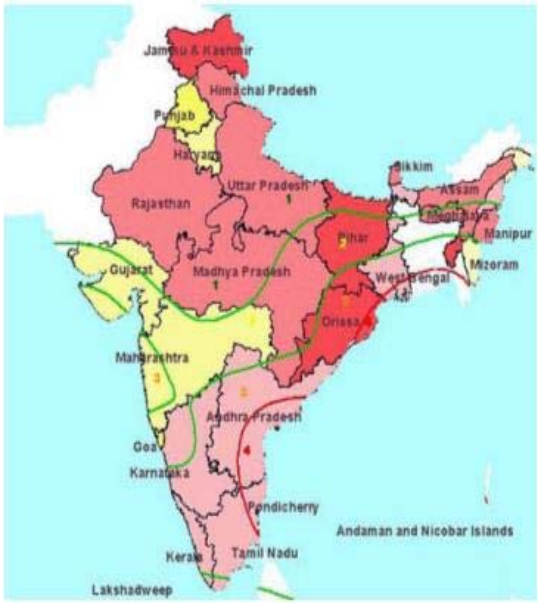
Orissa and Climate Change

Drought Prone





Flood Prone



Cyclone Prone

Disaster Capital of India

India's Climate Change Position

- Continuation of the principle of "common but differentiated responsibilities"
  - India accounts for 4% of global GHG emissions (compared to 25% for China and the US each)
  - India is among the lowest *per capita* emitter in the world, at 1.5 tons carbon equivalent per capita per year (compared to 20 for the US, 10 for Europe, and 4 for China)
  - India's energy intensity (measured as CO2 per unit of GDP) is currently at the world average but declining consistently
  - India still has 400 million people without access to lifeline electricity
  - India supports Copenhagen Accord and commits to reduce emissions intensity of GDP by 20-25 % by 2020

National Action Plan on Climate Change (NAPCC)

- Overriding priority of maintaining high economic growth rates to raise living standards, the plan "identifies measures that promote our development objectives while also yielding co-benefits for addressing climate change effectively."

  - National Solar Mission
  - National Mission for Enhanced Energy Efficiency
  - National Mission on Sustainable Habitat
  - National Water Mission
  - National Mission for Sustaining the Himalayan Ecosystem
  - National Mission for a "Green India"
  - National Mission for Sustainable Agriculture
  - National Mission on Strategic Knowledge for Climate Change

- All states have been asked to prepare State Level Climate Action Plans consistent with NAPCC by the PM and Minister of Environment and Forests.

PROCESS

Process

- Scoping study supported by DFID
- Preparation of Action Plan supported by World Bank

High-Level Coordinating Committee on Orissa CAP

Chief Secretary, Chairman

Development Commissioner

Secretaries of Agriculture,

- Fisheries and Animal Resources Development,
- Forests & Environment,
- Industry,
- Steel and Mines,
- Energy,
- Commerce & Transport ,
- Revenue & Disaster Management,
- Health and Family Welfare, and
- Water Resources

List of Sectors Identified

1. Agriculture
2. Fisheries and Animal Resources Development
3. Coasts & Disasters
4. Energy
5. Forests
6. Health
7. Industry
8. Mining
9. Transport
10. Urban Planning
11. Water

Sectoral Working Groups

- Sector Experts
- Convenors and Nodal officers for each Department
- Members:
  - 5-10 per working group
  - About 100 members in all
  - Intersectoral Groups (best practice)
- Truly collective efforts from the GoO in preparing the draft CAP

Working Group Composition (1)

Agriculture
Agriculture
Water Resources Department
Orissa University of Agricultural Technology (Research, Extension)
Horticulture
Soil Conservation
Orissa Watershed Development Mission

Coasts and Disasters
Revenue and Disaster Management Department
Orissa State Disaster Management Authority
Fisheries and Animal Husbandry
Water Resources
Commerce & Transport
Chief Conservator of Forests (CCF) and Wildlife
Chilika Development Authority

Energy
Energy
OREDA
DISCOM
Forests & Environment
Steel & Mines
Industries
Commerce & Transport
IPICOL (Investment Promotion)
State Pollution Control Board

Fisheries & Animal Husbandry
Fisheries & Animal Husbandry
Fisheries
Animal Husbandry and Veterinary Sciences
Forests & Environment
Water Resources
Chilika Development Authority

Forests
Environment & Forests
Chief Conservator of Forests (Forests)
Principal Chief Conservator of Forests (Wildlife)
Project Director Orissa Forests State Development Project
Agriculture
Panchayati Raj
Tourism
Watershed Mission

Health
Health
Health Services
Medical Education and Training
Rural Water Supply & Sanitation
Public Health
State Pollution Control Board

Working Group Composition (1I)

Industry
Industries
IPICOL (Investment Promotion)
Steel & Mines
Energy
State Pollution Control Board

Mining
Steel & Mines
Forests & Environment
Industries
Mines
Geology
State Pollution Control Board
Chief Conservator of Forests (Forests)

Transport
Commerce & Transport
Engineer-in-Chief Works
Roads
Housing & Urban Development
Industries
Transport Commissioner
Forests & Environment

Urban
Housing & Urban Development
Transport
Energy
Engineer-in-Chief (Works)
Chief Engineer (Buildings)
JN Urban Renewal Mission

Water
Water Resources
Housing & Urban Development
Agriculture
Health & Family Welfare
Engineer-in-Chief (Irrigation)
State Pollution Control Board

Stage I: Identification

- To list comprehensively all possible activities - considering policies, plans, schemes and practices - that are possibly relevant to the Orissa CAP.
- Some sectors listed as many as 50 to 60 action items
- Action items short listed to 12 – 15 items per sector on the basis of priority

Stage II: Prioritization

To prioritize those important activities that need to be addressed in the first stage of the CAP.

Objective

Type of Activity: Adaptation/Mitigation

Scale of Activity: State-wise/Local

Nature of Activity: Research study, policy action, pre-investment study, demonstration project, investment project, capacity building, operation and maintenance

Importance: High, Medium, Low

Constraints: High Medium, Low

Prioritization Matrix

Importance	Large	Minimal	None
High	Medium	High	High
Medium	Low	Medium	Medium
Low	Low	Low	Low

Constraints

Stage III: Prioritize Key Actions

- To outline the key aspects of the prioritized activities that include, type, nature, description of stages, timeframe, monitoring, budgets and sources

Mitigation	Both	Adaptation
	Agriculture	
	Fisheries & Animal Resources Dev.	
	Forests	Coasts & disasters
Energy	Industry	Water
	Transport	Health
	Mining	
	Urban	

Orissa CAP Approach

Priority Sector/ Area	Objective	Actions	Responsibility (agency, pvt. Sector, civil society, academic)	Funding Required	Sources (international, inter-governmental, local)
Agriculture	To assess climate vulnerability of agriculture	Expand use of traditional rainwater harvesting and water conserving techniques Prepare a adaptation manual Identify best practices in irrigation	DoRD (OWSM), DoWR, WORLP	$$$	

Agriculture: Key Proposed Actions

Policy and Institutions

- Undertake a strategic assessment of state Agriculture policy in the context of climate change
- Establishing institutional delivery mechanisms to promote best practices adaptation
- Increase the area under perennial fruit plantation to help cope with uncertain weather patterns

Capacity Building

- Capacity Building and Technical Support to CBOs for better management of land & water
- Capacity Building of Extension Personnel & Farmers
- Use of Gram Panchayat training Hubs for dissemination of information on climate change
- Scale-up and build capacity in existing livelihood-focused, people-centric integrated watershed programmes

Knowledge

- Develop water-efficient micro irrigation methods for individual and community farm ponds

Coast and Disasters : Key Proposed Actions

Policy and Institutions

- Strengthening delivery and monitoring system and preparedness in disaster prone coastal areas

Knowledge

- Flood mapping, flood forecasting, downscaled climate change projections modeling
- Assessment of erosion prone areas with the help of Digital Elevation Model
- Prediction through appropriate modeling the impact of sea level rise on coastal ecosystem
- Study of impact of global warming on the biodiversity of coastal ecosystems

Energy: Key Proposed Actions

Policy and Institutions

- Functional Reorganization of the Energy Department, OERC & OREDA
- A comprehensive policy and plan to save energy use in order to reduce the demand – supply gap
- Implementation of utility level DSM measures
- An operational plan for the Fund that will get revenue for the sale of power that is exported
- State-level energy efficiency standards for the various sectors

Capacity Building

- Capacity building of energy auditors and strengthening of existing energy conservation Cell
- Promotion and implementation of the National BEE's ECBC code

Knowledge

- Study on implementation of emerging Clean Coal Technologies

Fisheries and Animal Husbandry: Key Proposed Actions

Policy and Institutions

- Development of infrastructure for early warning systems in coastal areas for fishers

Capacity Building

- Application of biotechnology and skilled animal breeding for development of better adopted species
- Capacity building of livestock keepers

Knowledge

- Research on disease early warning system(livestock)
- Impact of climate change on inland and coastal aquaculture
- Impact of climate change on animal husbandry

Forests: Key Proposed Actions

Policy and Institutions

- Increasing reforestation / afforestation activities in degraded forest areas
- Protecting existing forest stocks to act as carbon sink
- Increasing planting on non-forest land and coastal zones
- Covering bald-hills with suitable species mix
- Increasing and protecting existing mangrove cover along the coast

Capacity Building

- Assessing fire management strategies
- Working to establish new systems to support for community users
- Building capacity of Panchayati Raj institutions/communities/JFM institutions
- Monitoring carbon stock and biodiversity at regular intervals

Knowledge

- Studies on indigenous trees species to assess their vulnerability
- Assessing additional threats to biodiversity and wildlife
- Updated knowledge on climate change science

Health: Key Proposed Actions

Policy and Institutions

- Integrating climate change considerations in the state health policy
- Manage vector borne and water borne diseases
- Manage heat wave conditions exacerbated due to climate change.
- Manage physical and psychological impacts due to extreme weather conditions

Capacity Building

- Capacity building of the health sector on adaptation

Knowledge

- Studies on climate change and health impacts
- Food safety and security that is undermined as a result of increased ambient temperatures and extreme events
- Interlinkages between air quality and climate change, and implications on health

Industry: Key Proposed Actions

Policy and Institutions

- Integrate climate concerns in policies and plans for industrial development and related areas.
- Prepare GHG profile of major industrial clusters
- Heat-island study for Talcher and Jharsuguda area
- Implementation of system of compensatory water harvesting
- Setting emission targets for thermal power plants

Capacity Building

- Training various stakeholders on climate change issues
- Streamline institutional arrangement and strengthen OSDMA to tackle extreme climate events in coastal areas

Research

- Carry out energy efficiency study for iron & steel, thermal power, cement and aluminum sector

Mining: Key Proposed Actions

Policy and Institutions

- Draft State Mineral Policy incorporating climate concerns
- Promote energy efficiency in mining clusters and mineral transport
- Identify the potential of beneficiation of low grade iron ore, manganese, graphite and chrome ore.
- Establish a robust system of environmental monitoring in major mining clusters
- Protection of water harvesting structures, reservoirs, weirs etc. from pollution and capacity reduction in mining intensive areas
- Creation and maintenance of green zones in major mining clusters

Capacity Building

- Imparting training on CDM to the officials of Steel and Mines Department, Directorate of Mines, IBM and SPCB
- Training of officials of S&M department, Directorate of Mines, SPCB, IBM etc on various aspects of climate change
- Generate awareness, create capacity and train the mining personnel/lease holders on benefit of cleaner production

Knowledge

- Identify areas in mining process where energy savings and emission reduction can be achieved.

Transport– Key Proposed Actions

Policy and Institutions

- Revising state transport policy
- Integrating urban and transport planning
- Enhancing the use of rail
- Moving towards low carbon fuel
- Piloting low carbon, green highways

Capacity Building

- Encouraging fuel use efficiency and tightening enforcement
- Promoting non-motorized transport
- Sequestering carbon through avenue plantations

Knowledge

- Estimating carbon emissions from the sector

Urban Planning – Key Proposed Actions

Policy and Institutions

- Promoting energy efficiency in buildings
- Developing a climate-responsible master plan
- Strengthening infrastructure for promoting non-motorized transport
- Incorporate climate considerations in water supply and sewerage design

Capacity Building

- Orienting towards energy-efficient street lighting through CDM
- Building capacity on climate change in ULBs

Knowledge

- Preparing a climate-friendly MSW management plan
- Working towards greater water-efficiency

Water– Key Proposed Actions

Policy and Institutions

- Expansion of hydrometry network
- Increasing the water use efficiency in irrigation
- Constructing and protecting water harvesting structures
- Improving drainage systems

Capacity Building

- Raising awareness raising with Pani Panchayat through Farmers' Training Programme and creating agro-climatic stations
- Integrated Water Resources Management

Knowledge

- Development of flood forecasting models
- Downscaling of Global Circulation Model
- River health monitoring and ecosytems environmental flow demand studies

Stakeholder Consultations

Industrial/Mining Clusters, Coastal Areas, Agricultural Belt, Tribal Belt and Urban Centers

Representing:

- Fishermen Associations
- Farmer groups
- SHG groups
- Trade unions
- Industry Associations
- Weaker sections and women

Format for Feedback Provision

Issues	Comments/Response	Agency	Response to response
Thermal Power	The anticipated expansion of thermal power generation capacity from 4000 MW to 55000/60000 MW is definitely not an environment-friendly solution. This should rather be a part of renewable energy portfolio that too in a phased manner.	Biswajit Mohanty kachhapa@gmail.com	To minimize GHG emission several points have been covered in Energy/KP/1 (e.g. All the thermal power plants should oblige to develop solar power at 1 %.)
Green Cess / Clean Energy Fund	The Government of Orissa may propose a green cess of 5 paisa / kWh to be levied on the electricity consumption by industrial and commercial consumers. It will be a very welcome move for promotion of renewables in the state. It would be easier to amend an existing legislation through an ordinance to impose this levy. While laying down the procedures for utilization of the green cess by creating a 'Clean Energy Fund'.	Chandrashekhar Mishra Principal Consultant Canyon Consultancy Services	The suggestion shall be incorporated in Energy/KP/1 It is proposed to introduce green cess as follows: 1 paise/ unit for LT 5 paise/ unit for HT & EHT

General Feedback

- Interdepartmental and intersectoral convergence is critical
- Streamlining the entire institutional mechanism is required for effective implementation of any action plan
- There is a need for a separate Agency / Department to co-ordinate climate change
- Monitoring and verification of CAP implementation – Independence necessary
- Demonstration for new initiatives / technology followed by scale-up should be the approach
- Transparency and public participation is key

http://orissa.gov.in/portal/occap.pdf

Concluding Remarks

- Orissa CAP is one of the first in India- Learning-by-doing approach
- Substantive time and involvement of GoO Convenors, Chairperson and Members
- Timely support of the World Bank and provision of international best practice and domestic expertise
- Stakeholder consultation workshops and web based consultations -- very useful feedback
- A climate change cell will be created to coordinate implementation (along the lines of Orissa Disaster Management Agency model)

Thank You