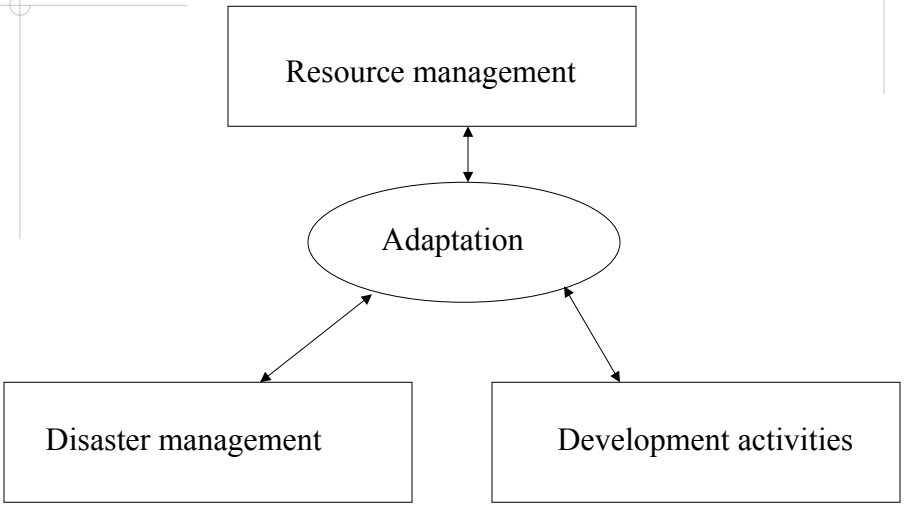
Climate risk and adaptation: importance of local coping strategies

Anand Patwardhan
Indian Institute of Technology-Bombay

Motivation

- Why is it important to understand local coping strategies?
  - In practice adaptation is often about managing climate risk
  - Need to understand how actors perceive, evaluate and respond to risk
  - Interactions between this process at different scales
    - Spatial: local – regional – national – international
    - Institutional: individual – family – community – regions (social networks?)
    - Temporal: time horizons of interventions, relief vs. recovery
- Ultimately will go to determine adaptive capacity

In practice, where does adaptation to climate change fit in?



How can V&A assessment inform local coping strategies?

1. Prioritizing regions and modes of intervention:
   - What are the vulnerability hot-spots?
   - How do different risk management elements map onto vulnerability components, and how do we evaluate across these elements?
2. Evaluating current / planned local coping strategies from the viewpoint of adaptation to climate change:
   - Are anticipated project benefits at risk?
   - How (and to what extent) will the project lead to enhanced adaptive capacity?

Identifying the highly vulnerable districts

Combinations of dimensions of vulnerability	Most Vulnerable Districts
Hazard	**South 24 Parganas** **Nellore**
Hazard + Exposure	**South 24 Parganas** **Nellore** North 24 Parganas
Exposure + Impacts	North 24 Parganas Jagatsinghpur
Hazard + Impacts	**South 24 Parganas** **Nellore** Jagatsinghpur
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Risk management and vulnerability components

Hazard	Structural & non-structural measures
Exposure	Set-backs and coastal zone management
Impacts	Early warning, storm shelters, evacuation routes, insurance
Adaptive capacity	Linkage with overall developmental activities?

Examples of how climate change might pose a challenge for local coping strategies

- Baseline of hazard:
  - Decadal-scale changes, influence of ENSO on occurrence
  - How useful is the 30-year climate normal?
- Which characteristics of the hazard will be affected by climate change?
  - Number of events & their seasonal / spatial distribution, type of events, event characteristics?
- What is the interaction with sea level change and changes in coastal geomorphology?

Trends and variability

State	Trend(cyclone/100yr)		
	Depression	Storm	Sever Storm
WB	**0.884***	-0.229	**0.313***
Orissa	**-0.979***	**-0.925***	-0.011
AP	0.187	-0.345	**0.54***
TN	0.0044	-0.154	0.116
Gujarat	**0.532***	-0.074	-0.067
Note:The values with * sign are significant at 5% level			

- No long-term trends in overall cyclone incidence, however, variations by state
- Decadal scale variation in spatial patterns of incidence
- Important to consider this with regard to the baseline and hazard characteristics and associated implications for project design

How can the understanding and analysis of past and current local coping strategies help in adaptation to climate change?

- Developing and validating the underlying theories and conceptual frameworks for vulnerability & adaptation
  - This is an area where practice drives theory
  - We have made a start at creating an observational and empirical base, we now need to look at experiments
    - In practice this might mean pilot adaptation projects
- Cross-sectional and temporal analysis of past impacts can help in ground-truthing indicators for specific and generic adaptive capacity by looking at actual, past outcomes
  - Important, but depends critically on the availability of data
- Do we have mal-adaptation?
  - Hazard & exposure correlation

Some final remarks on what we may be trying to measure with indicators

- Inputs, process, outcomes
  - Number of beds / 1000 people
  - Process: state of the public health system?
  - Life expectancy
- Dynamics vs. system state
  - Most of the times we measure the latter
  - Education – Adult literacy (state of the system), or relative growth rates of male vs. female literacy (dynamics of the process)?
  - Replication of system innovations
  - Measuring attributes such as salience, perception, institutional and policy preparedness

Policy questions

- What are the limitations of local coping strategies?
  - Or, what is the coping range?
  - Limits of "autonomous" adaptation: adaptation may be neither automatic, nor successful
- How do we replicate successful or viable coping strategies?
  - Diffusion of system innovations (Amul, Grameen Bank)
- How do we create an environment in which local coping strategies will be identified, design and implemented more readily and effectively?
- How do we ensure synergies and resolve conflicts between local and regional or national processes and objectives?

Examples

- Disaster management focus on relief:
  - How quickly can the flow of economic goods and services be restored? – recovery vs. relief
- Linkage with development planning
  - Development planning authority is usually local
  - Past central – local conflicts (CRZ regulations)
- Linkage with development issues – baselines can change rapidly and in unanticipated and non-intuitive ways
  - Growth of the Internet – problem sometimes is not the lack of information, but the ability to act. Who will act – the state, NGO's or private enterprise?