

Adaptation Problem Types



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Two observations

on the status quo
of vulnerability and adaptation
research

Lack of an intermediate level of analysis

- Discourse takes place on two disparate levels:
 - descriptions of idiosyncratic cases
 - general frameworks, e.g., IPCC TAR; UNDP APF; Turner et al., 2003; Füssel & Klein, 2006; ...
- Huge gap in-between
 - frameworks are very general, almost trivial
 - e.g., coupled socio-ecological system
 - frameworks' concepts are difficult to make operational, i.e. to apply to a case

Obscurity of Purpose

- Little is said on purposes of the vulnerability and adaptation assessments
 - in the case study literature, methods and results are presented, but purposes are left implicit
- VERY different purposes
 - e.g., (i) to raise awareness, (ii) to optimise a management policy or (iii) to find a normative agreement between conflicting parties
 - conceptual literature: Burton et al., 2002; Füssel & Klein, 2005; O'Brien et al., 2006; Smit & Wandel, 2006

Adaptation Problem Types

Rationale

- Adaptation Problem Typology as an intermediate level of analysis
- Change perspective
 - **from** discussing what the concepts of vulnerability, adaptation, adaptive capacity, resilience, etc. mean,
 - **to** being explicit on what type of problem (i.e. what purpose) we are addressing,
 - **and then** then we can think of which concepts and methods are useful for solving these.

Point of Departure

- Vulnerability assessments are special kinds of adaptation assessments
- Adaptation is human action
- *Action situation* (Ostrom, 2006) as the principle unit of analysis
 - one or several actors
 - within a common environment
 - physical
 - institutional: norms, laws, economic incentives, ...

Three distinctions

1. Three cognitive phases of adaptation

- becoming aware that there is a problem
- gaining understanding of the action situation
- choosing an effective action

2. Perspective

- problem formulated from the perspective of the vulnerable actor or from the perspective of a facilitator

3. Action-outcome linkages

- individual or collective action

Problem Typology

1. Single Perspective Problems

1.1 Vulnerability Identification

1.2 Action Situation Identification

1.3 Effective Choice

2. Facilitation Problems

2.1 Communication

2.2 Environment Design

3. Collective Action Problems

...

1. Single Perspective Problems

- Action situation
 - single vulnerable **actor** (or several independent actors)
 - problem formulated from the perspective of the vulnerable actor
- Types
 - 3 types can be distinguished based on three cognitive phases of adaptation ...

1.1 Vulnerability Identification

- The actor does not know whether she has (or will have) a problem
- Solution
 - look for problem indication
- Examples
 - e.g., a government prioritising R&D, most IPCC work
 - “classical” top-down vulnerability assessments, indicator-based approaches, end-point (Kelly & Adger, 2000), outcome (O'Brien, 2006)

1.2 Action Situation Identification

- The actor is aware that she has a problem but does not understand the action situation fully
- Solution
 - Identify properties of the action situation, e.g., what kind of knowledge is available about the changing environment? What are possible adaptation actions?
- Examples
 - a farmer who is confronted with a new crop disease
 - “bottom-up”, community-based vulnerability and capacity assessments, starting-point (Kelly & Adger, 2000) context (O'Brien, 2006)

1.3 Effective Choice

- The actor knows that he has a problem, has identified the action situation fully, but it is not obvious which actions are (most) effective.
- Solution
 - deduce an effective action from the description of the action situation by applying analytical methods
- Examples
 - a government building dikes, an insurance company setting its premium
 - engineering, risk management approaches

Remarks

- Difficult to establish a clear cut
- Succession / iteration
- Not all 3 types have to be traversed
 - having identified vulnerability can be sufficient for solving the problem
 - having identified the action situation can also be sufficient, i.e. it might be obvious which action is effective
- Science over-emphasizes effective choice problems

2. Facilitation Problems

- Action situation
 - single vulnerable **actor**
 - **facilitator** who knows that the actor is vulnerable and wants to support his adaptation
 - problem formulated from the facilitator's perspective
- Types
 - Communication: facilitator interacts with the vulnerable actor.
 - Environment design: facilitator acts upon the environment of the vulnerable actor.

2.1 Communication

- Problem
 - adaptation is constrained cognitively
- Solution
 - facilitator inter-acts with the actor
 - facilitate i) vulnerability identification, ii) action situation identification or iii) effective choice
- Examples
 - communication of risk to people living on a floodplain
 - seasonal climate forecast

2.2 Environment Design

- Problem
 - adaptation is constrained physically or institutionally
- Solution
 - the facilitator acts upon the (physical or institutional) environment
- Examples
 - infrastructural measures
 - legal incentives, e.g., a government passing laws
 - economic incentives, e.g. micro-financing

3. Collective Action Problems

- Action situation
 - several **actors**, effectiveness of individual actions depends upon actions of others
 - one **facilitator**
 - e.g., usage of common pool resources
- Types
 - communication
 - negotiation
 - environment design

Conclusions and Outlook

Conclusions

- Adaptation problem typology as an intermediate level of analysis
 - explicate purposes of assessments
 - conceptual clarity can be gained by describing the problem addressed not in terms of highly abstract concepts such as vulnerability or adaptive capacity but in terms of less abstract concepts such as actor and action situation.
 - helps to better connect to the knowledge of other scientific fields that address similar problems but use different terminology.

Outlook

- More cases need to be considered
 - meta-analysis of 200 European vulnerability and adaptation case studies referenced in the IPCC Forth Assessment Report
- Refine typology
 - type of knowledge available about the climate stimuli (e.g. probabilities or possibilities)
- Collective action problems
 - water management cases in ADAM and NEWATER

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