



# A Framework for Analyzing Climate Change Adaptations as Actions

Workshop on Barriers to Adaptation  
to Climate Change

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# Overview

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- Paper presents a framework for use in research on social adaptation
- With the Objectives (inter alia) to...
  - ... clarify concepts of adaptation and crucial adaptation types, e.g. reactive, implicit or facilitating adaptation
  - ... identify responsible actors or coordination needs for adaptation
  - ... **characterize and analyze barriers to adaptation**
  - Paper illustrates concepts with a case study
- One underlying core argument:
  - Barriers are always relative to a specified set of adaptations:  
*“This and this adaptation is constrained by the following barrier”*
  - Delegates the normative question about appropriate adaptation or mal-adaptation to a separate analysis
  - With this approach, a proper conceptualization of adaptation is the necessary basis for analyzing barriers to adaptation

Eisenack & Stecker (2012) A framework for analysing adaptation as actions, Mitigation and Adaptation Strategies for Global Change 17 (3), 243-260.

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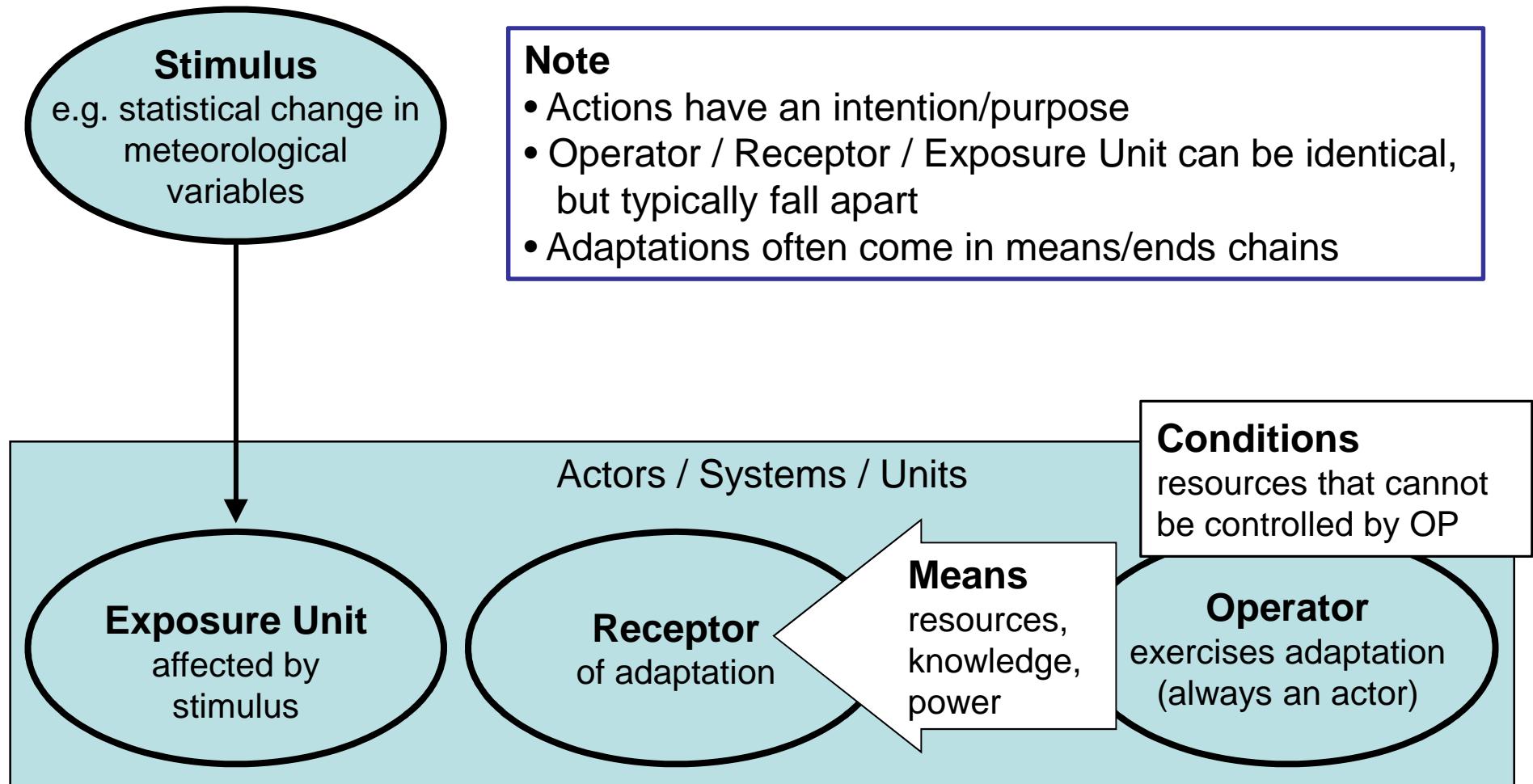
# Literature

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- Basic work on the theory of adaptation (e.g. Smithers & Smit 1997, Smit et al. 2000, Adger et al. 2005)
- Many aspects in the IPCC definitions remain unclear or vague, e.g. who “adjusts” a “human system”?
- Literature on adaptive capacity (e.g. Smit and Wandel 2006, Gallopin 2006, Füssel 2007) not always clear-cut about the link to adaptation
- We concentrate on adaptation by human individuals and collective actors
- Combines analysis of Smit et al. (2000) with action theory from sociology (Parsons 1937) and analytical philosophy (e.g. Wilson 2008)

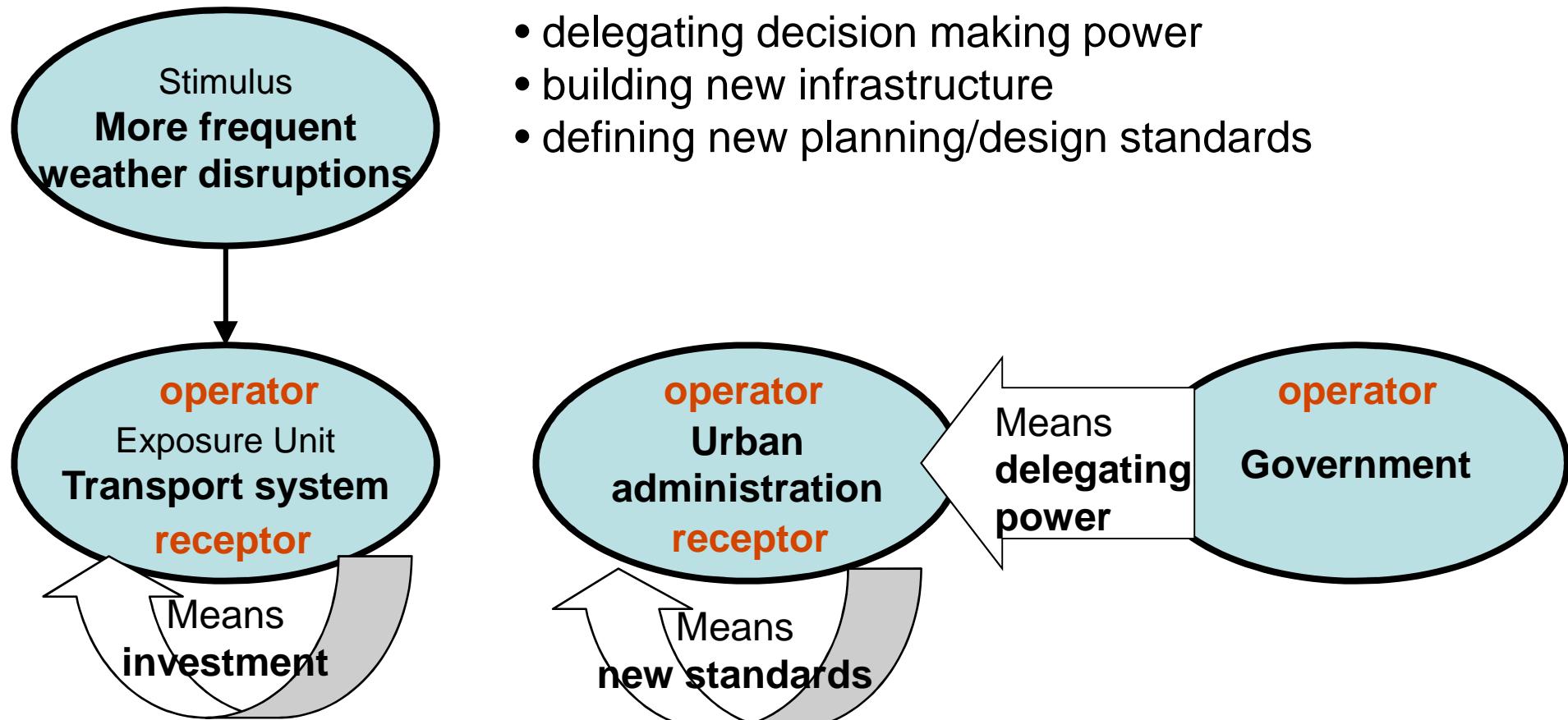
# Adaptation as (Collective) Action: Concepts

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# Stylized Example

## ■ Introducing redundancy into a urban transport system



# Some suggestions for definitions

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- Adaptations are “*individual or collective actions that are explicitly or implicitly intended to affect exposure units of climate change, or that indirectly achieve this end*”
  - An adaptation is (inter alia) characterized by its operator and by the means that are necessary for its implementation
- Barriers are “*sets of conditions that might hinder the implementation of specific adaptations*”
  - Conditions are (inter alia) characterized by the means that are available to the operator and by the institutions that shape the operator’s decisions
  - Conditions may be changed by (facilitating) adaptations by other operators

# Barrier types

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- 1. Missing operator:** e.g. ignorance of impacts or adaptations by all involved actors
  - 2. Missing means:** although there is an operator who perceives a need to act, the necessary means are not available (e.g. missing budgets, mismatch of responsibility)
  - 3. Unemployed means:** Means are not sufficiently employed although there is an operator to whom the necessary means are available (e.g. low priority, missing incentives,).
  - 4. Complex actor relations:** Interactions of multiple interconnected exposure units, operators and receptors leads to unemployed means (e.g. misaligned incentives, transaction costs)
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# Example: cooling water scarcity during heat waves

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- Reducing thermal power generation or “boiling” the rivers?
- When to relax environmental regulation? Which power plants should reduce production temporarily?
- Suggestion: Dynamic heat load plan
  - Upstream-downstream coordination of power plants
  - Ex post adjustment of power plant approvals according to observed climate
- Missing operator: currently not discussed in practice (to my knowledge)
- Missing means: legal problems with ex post changes of approvals?
- Unemployed means: high losses for electricity companies? upstream-downstream externalities?
- Complex actor relations: negotiate an agreement between multiple economic/social groups and interactions between different jurisdictions (upstream-downstream)

# Discussion and conclusions

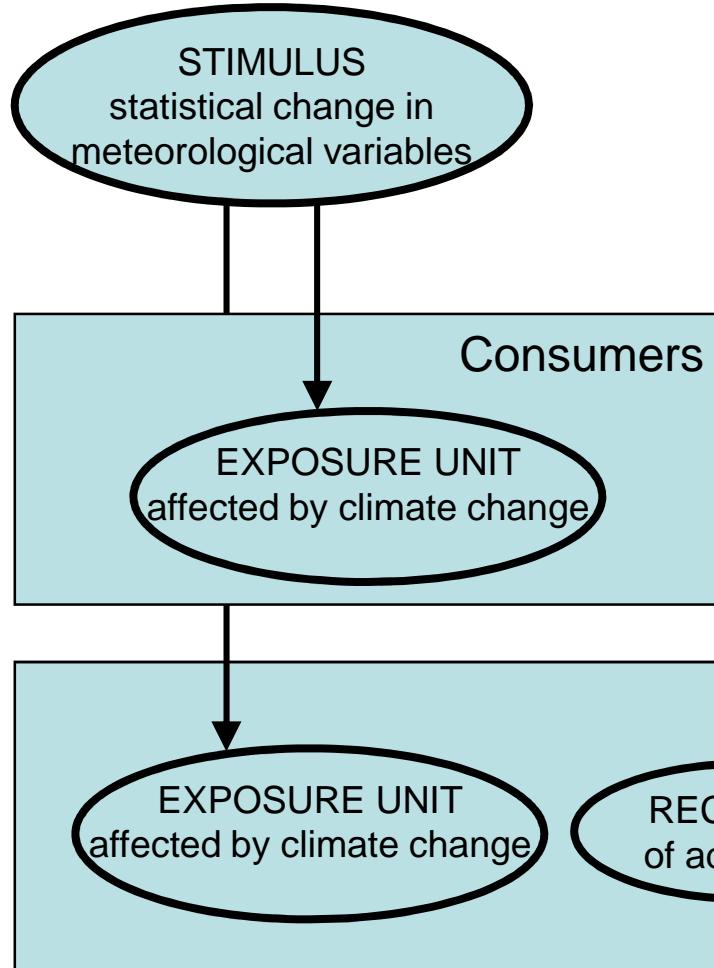
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- Argument: Barriers are always relative to specified adaptations
  - Definition and typology of barriers based on a conceptualization of adaptation
  - From this, a rough typology of barriers is deduced
  - Possible extension of typology
    - Adaptations frequently come in means-ends chains (means of one actor influence conditions of another)  
-> how do barriers differ depending on step in such chains?
    - Refinement e.g. by type of operators, means, or conditions
  - Limitation: the action-oriented view is very fine-grained in comparison to a system-oriented view (e.g. with adaptive capacity in the center)
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# Barriers due to Actor Networks

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Potential for many conflicts / externalities  
⇒ wrong incentives for adaptation  
⇒ co-ordination involves high transaction costs