



# USING STRUCTURED DISCUSSIONS TO EXPLORE CROSS-CUTTING THEMES IN RESEARCH AT THE DECISION CENTER FOR A DESERT CITY

Community of Graduate Scholars 2012-2013

## Uncertainty

1. What are the sources of uncertainty in your DCDC research?
2. How do you characterize, represent, or solve that uncertainty?
3. What are the challenges for research and policy?

### Students consider how uncertainty plays out in their DCDC projects

Sources	Manifestation	Representation	Crosscutting Challenges
Climate change	Local manifestation	Modeling (predictive)	•Assumptions needed for policy scenarios but increase uncertainty  •Translating “experimental” results into informed decision-making
	Social reaction	Modeling (scenarios)	
		Normative (models)	
Policy landscape		WaterSim	•Used to challenge validity of approaches
	Sector fragmentations	Identify and state uncertainties	
Different perceptions	Decision-making responses	Adaptive capacity and anticipatory approaches	•Inherent limits of qualitative and quantitative approaches to data collection and analysis
	Stakeholder groups	Iterative reliability testing	
Socio-environmental linkages	Global/local	Discourse, framing	
	How does policy alter water demand?	Simulation modeling	

### Students apply that knowledge to a decision-making scenario

#### Scenario

The Environmental Protection Agency (EPA) recently settled a lawsuit against several major hydraulic fracturing companies that were found in violation of the Clean Water Act and established the Green Stormwater Innovations (GSI) program to grant funds to the states. The GSI will award up to \$10 million to states for proposed stormwater management interventions that demonstrate a commitment to environmental sustainability. The City of Seattle plans to apply for a portion of Washington's GSI allocation and is considering three options: green infrastructure incentives, onsite stormwater reuse, and retrofits of existing infrastructure.


www.epa.gov

#### Option 1

##### Green Infrastructure Incentives

Details: Funds allocated to building green infrastructure in public buildings and land. Also includes rebate programs for homeowners.

Examples:

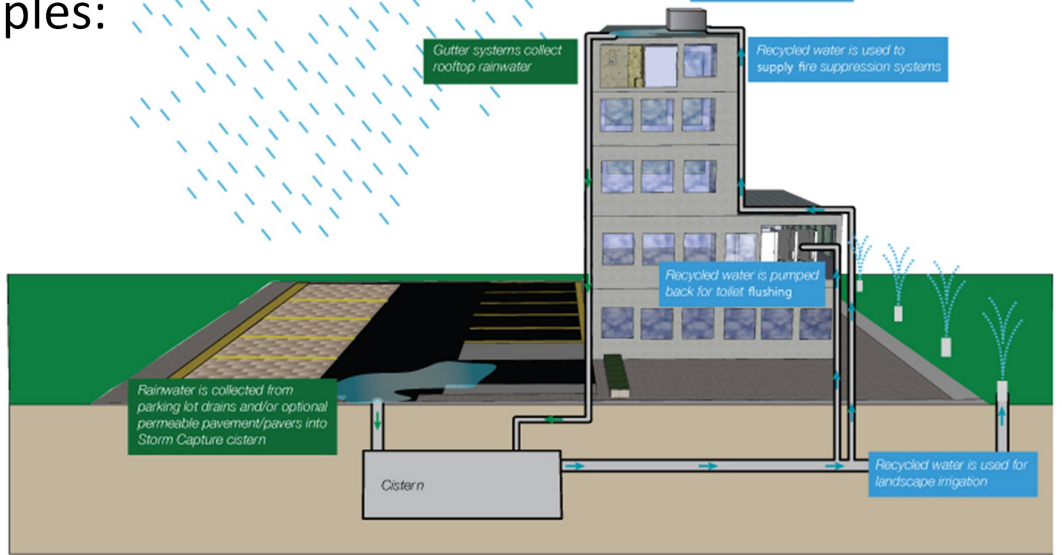


#### Option 2

##### Stormwater for Onsite Non-Potable Reuse

Details: Funds will be used to retrofit existing public buildings with recycled water systems for stormwater.

Examples:

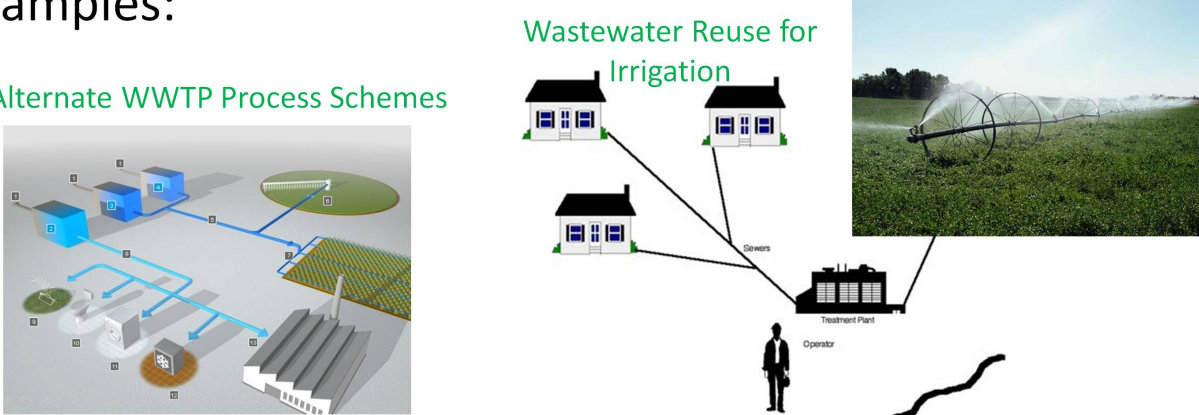


#### Option 3

##### Treatment Retrofitting and Non-potable Reuse

Details: Funds will be used to repair and upgrade existing wastewater treatment plants and to expand non-potable water connections in public property.

Examples:



### Sources of Uncertainty:

- Cost
- Compatibility with old infrastructure
- Types of plants used for landscaping
- Vegetation resistance to drought
- Maintenance over time
- Local management of landscapes
- Public health concerns (i.e.: mosquito harvesting)

### Solutions:

- Cost benefit analysis
- Forecasting
- Importance of creating your own evidence (experiments, small scale examples) when historical data doesn't exist

## Values and Perceptions

Values play an important role in research at the Decision Center for a Desert City. They are the focus of interdisciplinary research and also guide the selection of research projects for funding.

To explore how values vary across graduate students we played a decision making game.

Graduate students and Dr. Nelson individually allocated funds to projects they believed best achieved DCDC's mission.

THEN...

Graduate students and Dr. Nelson were paired up and negotiated in their pairs how to fund the projects.

#### Your Role & Responsibilities

With your assistance, Dave White, Director of DCDC, hopes to award funds to three projects that fulfill the scope, mission, and vision of DCDC. As a member of the “Director's Advisory Committee on Funding Allocation”, you are required to:

- ☐ Make a recommendation to DCDC about what projects to fund.
- ☐ Allocate funds to the “TOP THREE PROJECTS” (in your opinion) that fulfill the scope, mission, and vision of DCDC.

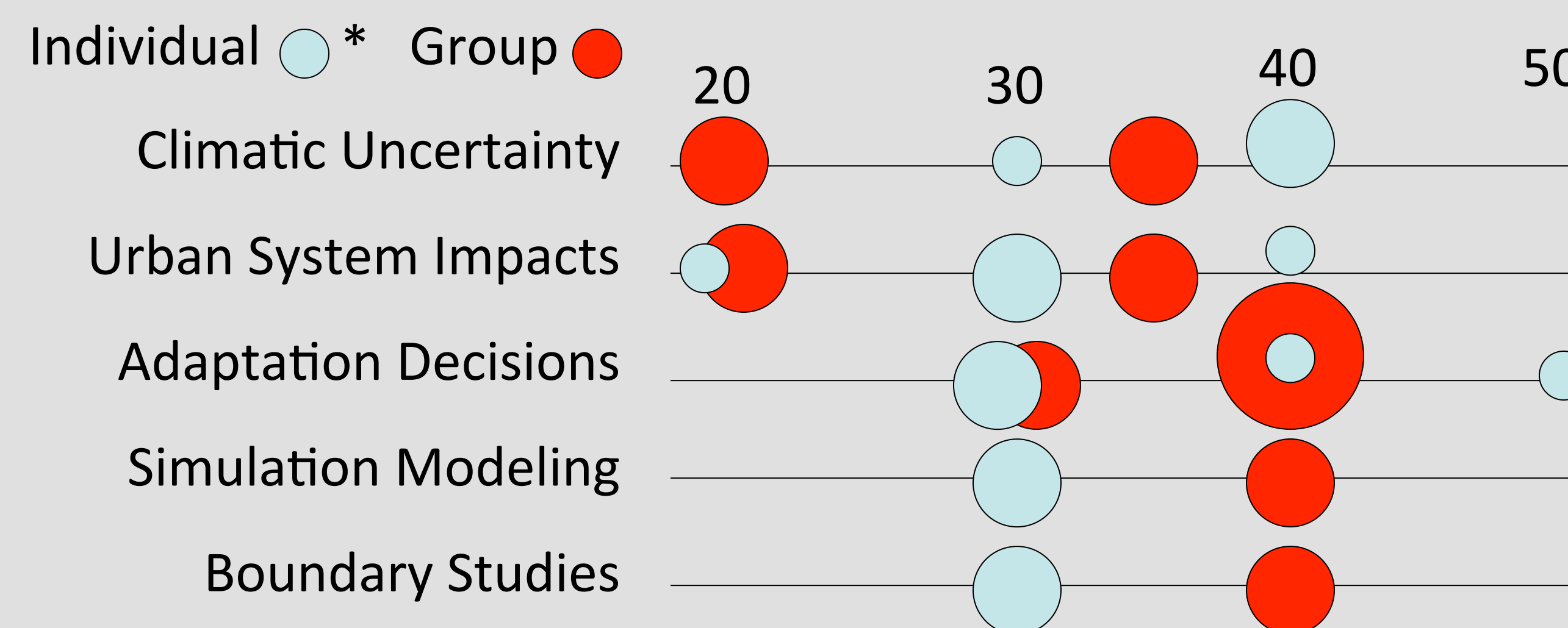
DCDC has the capacity to manage “3 PROJECTS”.

**Your Budget: 100**

You are making recommendation to DCDC about what projects to fund. From the five categories below, allocate the current budget to “**TOP THREE PROJECTS**” which in your opinion fulfills the mission and vision of DCDC (Justify your choice)

- ☐ Climatic Uncertainty
- ☐ Urban System Impacts
- ☐ Adaptation Decisions
- ☐ Simulation Modeling
- ☐ Boundary Studies

## Results



\* Dot size indicates the number of responses (the three sizes correspond to 1, 2, and 4, responses)

- Individuals brought their own disciplinary perspectives to bare when making funding decisions
- Funding decisions shifted when exposed to different values and different interpretations of the research streams
- Participants were willing to collaborate and values shifted indicating new conclusions drawn rather than an average of the two original values

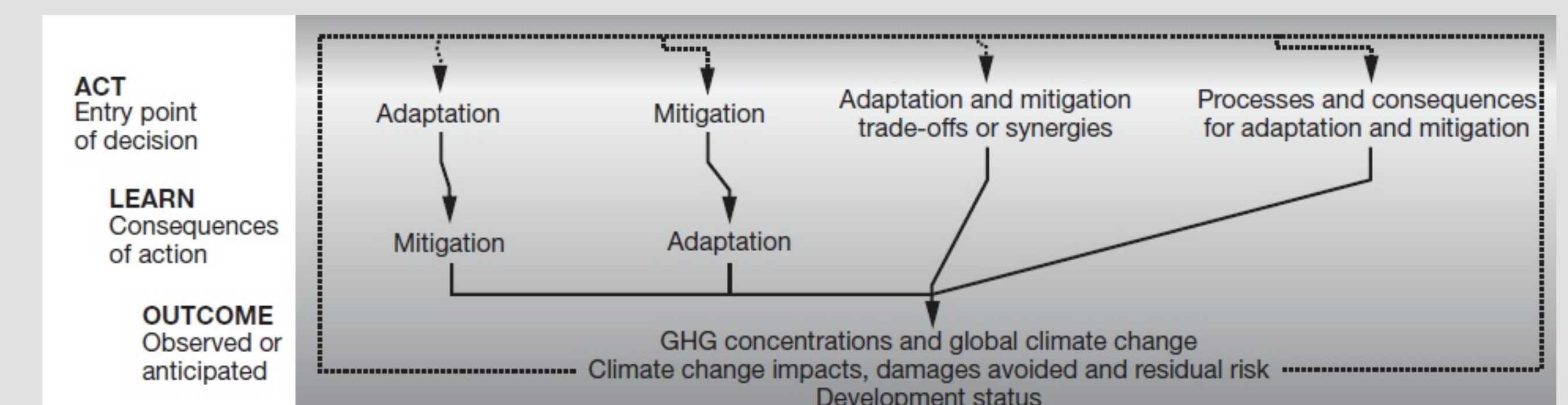
### Key questions on Values and Perspectives for DCDC

- How are values defined by different research teams?
- What disciplines or theories are used to define values?
- How are values measured?
- How are values the subject of inquiry in different DCDC projects?

## Adaptation

Adaptation research at DCDC involves:

Topic:	Methods:
Climate change	Scenario analysis, discourse analysis, excavation, surveys, ethnographic methods, hydrologic modeling, games...
Urban planning	Ethnographic methods, surveys, workshops...
Water planning	Scenario analysis, games
Perception of risk	Ethnographic methods, surveys, modeling
Communication	Ethnographic methods, surveys
Food security and climate shocks	Comparative, empirical, archaeological methods, dynamic modeling
Barriers to adaptation	Text analysis, ethnographic methods



Typology of inter-relationships between climate change adaptation and mitigation. Adapted from Klein et al. 2007

### Actors

- Low interactions among actors
- Some actors privilege certain kinds of knowledge
- Institutions that make decisions are ill-equipped in some cases.

### Policy

- Vested interest in existing policies, especially by those with authority.
- Implementing new policies is challenging. Policies can be interpreted differently across scales.

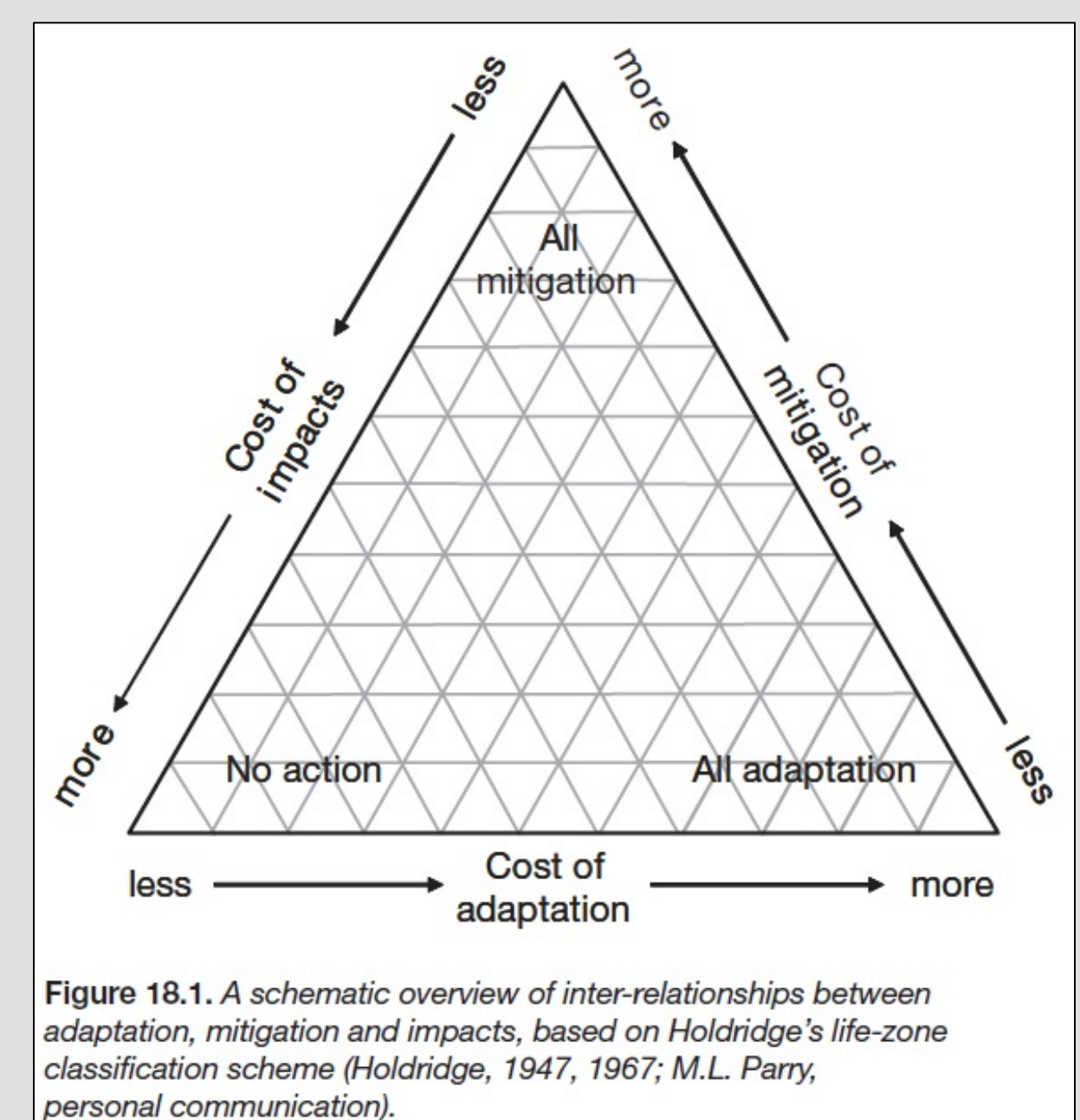


Figure 18.1. A schematic overview of inter-relationships between adaptation, mitigation and impacts, based on Holdridge's life-zone classification scheme (Holdridge, 1947, 1967; M.L. Parry, personal communication).

### Challenges of adaptation research:

- Distinguishing adaptation from mitigation
- Defining at what point something is an adaptation
- Deciding whether an adaptation is good or bad
- Dealing with tradeoffs of adaptation (social and ecological)
- Distributing benefits across actors and interests (who benefits from adaptation?)
- Communication across stakeholders

Figures source: Klein, R.J.T., S. Huq, F. Denton, T.E. Downing, R.G. Richels, J.B. Robinson, F.L. Toth, 2007: Inter-relationships between adaptation and mitigation. *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 745-777.