

Workshop on Barriers to Adaptation to Climate Change

Berlin Schwanenwerder, 18th-21st September 2012

Documentation of the working groups and of the discussion of their results

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Research Group for Adapting Utilities to Climate Change - Analysing and Developing Private and Public Action

Results of Working Group A

Members of the working group:

Susanne Moser(chair), Maja Rotter (chair), Carolina Adler, Clemens Heuson, Geoff Whitman, Jan Micha Steinhäuser, Jochen Hinkel, Nils Marscheider

Minutes by: Jacob Beutler, Maja Rotter

The overall guiding questions of this conceptual workshop were:

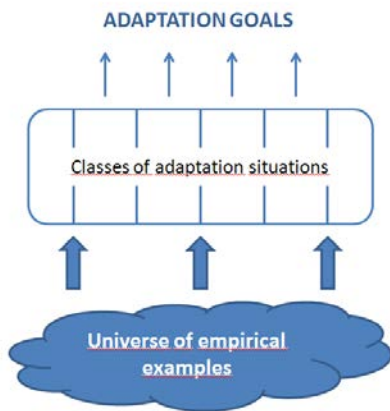
1. How may barriers to adaptation be conceptualized and analyzed?
2. What are the overarching issues and challenges in developing and using frameworks on barriers?
3. How do barriers differ between different actors and scales? How do they interact?
4. Which political, institutional, and organizational strategies are suitable for dealing with barriers?

Barriers to adaptation – concepts

With regards to the guiding question (A) the participants expressed different discourses, frames and problems related to the topic of adaptation and barriers to adaptation, thereby reflecting insights drawn from previous findings and discussions during the paper sessions. A broad and diverse picture of questions and problem perceptions was delivered this way. Definitions, goals and the quality of adaptation were questioned and more differentiation and the engagement with blind spots were expressed as badly needed:

- What is the quality of adaptation (research): warning or showing opportunities?
 - How can blind spots be encountered?
 - What is the uniqueness of the problem of climate change?
 - What do we mean by adaptation (implicitly)?
 - How can adaptation be framed (values, justice)?
 - What (if any) is the goal of adaptation?
 - What is the utility of scientific knowledge in clarifying adaptation objectives?
 - Which perception / framing of problems is used (optimism, realism, pessimism)? How may the status quo be altered? How may existing resistance to change be countered?
 - How may differentiation in the adaptation debate be further increased?
 - What is the relation of biophysical and social/cultural barriers?
 - What is the interrelation of ontology and epistemology?
 - What is the relation of transformation and adaptation?
-

Issues and challenges in developing and using frameworks



In response to the challenges using different frameworks on barriers (B) a generalizing figure was proposed by Susanne Moser to structure the following discussion. In this figure a universe of empirical examples is clustered in different classes of adaptation situations. These different classes (or types?) of adaptation situations are hindered or constrained in diverse ways within the process of goal attainment. Moreover, goals are diverse and contested.

Among the mentioned classes to structure empirical examples according to this figure were:

Classification by:

- actor perspective(s) (individual, collective, private, public)
- stage in the adaptation process
- time horizon
- geographical scale
- nearness of expected impact / level of crisis

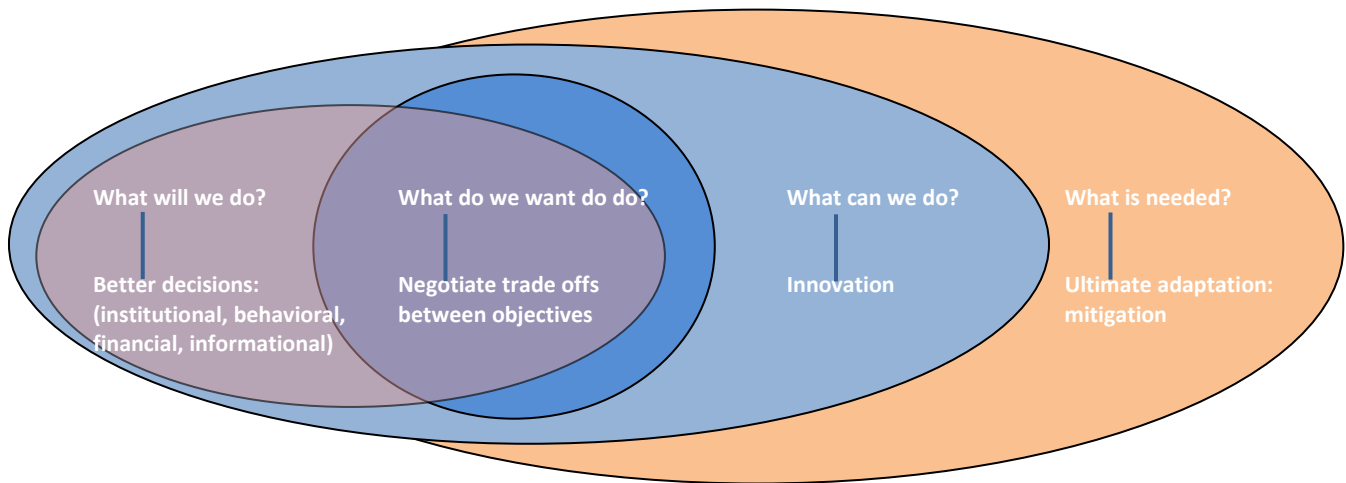
However, conceptual dispute on the different goals of adaptation emerged and the discussion was not able to reveal common ground among different mindsets: Is adaptation serving a higher goal (e.g. sustainable development)? Is adaptation therefore not a goal but a driver of change? Is change really fundamental and inherent to adaptation or is the intended goal of adaptation to secure the status quo?

These questions were discussed and different contested solutions were offered. Sustainable adaptation (problem: a new goal/quality in itself?), transformation (problem: how to overcome the physical limits of the planet?), result driven presentations (problem: story might be lost in the numbers) and how is it possible to handle blind spots.

Within these discussions participants emphasized the need to apply existing social science knowledge, methodologies, and approaches instead of inventing new frameworks, more theory and further analytical lenses. Empirical research and the existing basis of projects were valued as helping not to get lost in theoretical discourses and to be precise about the underlying typology.

Several times the question emerged if and to what extent there may exist a difference between social and natural/physical barriers to adaptation. The discussion on the difference between barriers to and limits of adaptation further complicated the discussion. Further discussion revealed that the questions raised by Stéphane Hallegatte could serve as a valuable approach to confine this general dispute. These questions were furthermore discussed as applicable to a range of adaptation examples and served as a broad framing for the continuing discussion.

The working group developed tentative corresponding answers in relation to Hallegatte's questions presented in the following figure:



Barriers for different actors and scales – variation and interaction

To gain more empirical ground it was suggested to continue by relating the discussion to some tangible examples in order to illustrate adaptation action, goals of adaptation and barriers and to reflect on the guiding question (C). Three examples, given by the participants, showed that each example involved completely different barriers to adaptation but it became also apparent that adaptation goals ranged from economic to environmental aspects. The barriers were also diverse and varied among political, economic, and institutional constraints but also connected to knowledge and collective action. Also the trade-off between short term and long term problems concerned the working group.

Political, institutional, and organizational strategies for dealing with barriers

The group was mainly reflecting on expectations of the scientific enterprise and its strategies for dealing with barriers of adaptation. The participants formulated research questions in response to the guiding question (D).

The expectations of the scientific enterprise concerned the context, specifically clarity regarding the underlying definitions and existing theory of adaptation and to go further and faster in identifying and/or developing best- practice examples. In this context it was proposed to integrate practitioners in science as well as scientists in practice to increase and accelerate learning. To make adaptation happen and to overcome some of the existing barriers it is important to focus very much on the practice. Furthermore a wide interaction with other research fields and perspectives was seen as central and very helpful to reframe knowledge and to deliver new insights for policy and research.

Expectations of the scientific enterprise:

- Be certain about which knowledge is valued, how is effectiveness evaluated?
- Public value of research (evaluation by affected communities)
- Epistemic standards or values – which count?
- What may advance the gap between action and reflection (practice and science/research)?

- Don't invent new theory - make better use of existing ones.
 - Problem-orientation, use-inspired research, (typology of) co-production of knowledge, transdisciplinarity, action research
 - Research driven by liberation philosophies
 - Disruption of research process, disciplines
 - Ability to have extended foresight
- "Begleitforschung": evaluative research accompanying action and decision-making to accelerate learning
 - Broader interaction with humanities (art, ethics, philosophy, history, depth psychology, ...)

Reflecting that research is undertaken by individuals driven by personal norms and values, a brainstorm session was undertaken. All participants were asked which personal driving factors they had to take part in the scientific enterprise. Moreover, participants shared and gathered attributes on which the scientific enterprise should focus:

- To inform
- To find solutions
- To question the status quo
- To bear and adjudicate among different rationalities, ignorance, contradictions
- To give advice
- To serve the demand for information (within constrained context)
- To shape and question/break out of fields/paradigms
- To enable and constrain force itself (institutionalized sense-making)
- To find common ground
- Not to fall for the danger of hiding values/norms under protective label of scientific objectivity
- To maintain credibility

Research questions:

The focus of the research questions was also an analysis of the research community itself. Some participants still expressed a need for further reflection about the underlying definitions of adaptation, goals, drivers, barriers and limits to find a common ground for analysis. Others perceived strategies to deal with barriers as bearing more relevance for practice and therefore focused on ideas how to integrate science and practice.

- What is different or unique about climate change (and therefore about adaptation and adaptation barriers)?
- How can we overcome barriers?
- How does co-production of knowledge a) reframe scientific knowledge, b) challenge scientific methods, c) justify its use?
- Reframe scientific knowledge?

- Challenge scientific methods?
- Justify use of co-production (evidence based policy environment)?
- Which attributes of knowledge count or can be valued as appropriate for evaluating use-inspired knowledge? (credibility, salience, legitimacy?)
- How do people self-organize and target their decisions/actions to affect change?
- What happens after the “limit”?
- What comes beyond the limit?
- What are impossible goals? (feasibility constraint)
- Is fundamental transformation an expanded definition of adaptation?

Results of Working Group B

Members of the working group:

Klaus Eisenack (chair), Richard Klein(chair), Fuad Ali, Robbert Biesbroek, Jana Herrmann, Paul Lehmann, Christoph Oberlack

Minutes by: Stefanie Woelfle, Klaus Eisenack

Content:

1. Common Understanding: Frameworks, Concepts, and Core Assumptions
2. Expectations from Frameworks and Actor-oriented vs. System oriented Approaches
3. Challenges with Respect to Barriers and Possible Future Research Questions

1. Common Understanding: Frameworks, Concepts, and Core Assumptions

First, an overview of frameworks, concepts, and core assumptions relevant to adaptation and to barriers in particular was collected (see below). The collection revealed a broad diversity of concepts, theoretical approaches (theories, methods) and issues, but also suggested that the use of joint frameworks that link different concepts, approaches and methods might provide advantages

Concepts:

- Conceptualization of “barrier to adaptation”
- Classification of barriers
- Barriers on different level (individual, organizational etc.)
- Relationships between barriers, drivers and opportunities
- Phase / process models of adaptation
- Criteria for assessing adaptations

Theories:

- Theoretical pluralism
- Eclecticism or single theory
- Deconstruction and reframing
- Multi-criteria decision analysis
- Discourse theory
- Organisational learning
- Action theory
- Welfare economics and efficiency
- Group theory
- Sensemaking

- Institutional economics
- System theory of vulnerability / Actor-oriented approaches

Further issues:

- Lists of barriers without clear theoretical background
- Quantitative and qualitative empirical data bases on barriers to adaptation
- Top-down vs. bottom-up
- Role of technology and technology policy to enable adaptation
- UKCIP decision-making framework

1.1. Does a common framework make any sense?

Following the appraisal of this diversity of approaches to adaptation research, it was discussed if one should try to create a joint theory/framework for adaptation to climate change. To put this on a firm ground the difference between frameworks (which specify the scientific terms and the elements that are included in the analysis) and theories (which specify the functional or causal relationships between elements) was discussed. While it was acknowledged that a joint framework would have advantages (such as the benefit of a common scientific language or a speeding up of research for practical adaptation measures), it was nonetheless stressed that a joint framework would also be a very ambitious undertaking. It was established that research on barriers should not (and cannot) rely on a single theory, as an overarching theory cannot provide researchers with multiple lenses. This is especially relevant as the scientific community has diverse perspectives on adaptation and its barriers, for example whether to look at barriers from an actor-oriented view or a system-oriented view. The general consensus was therefore that a common framework that encompasses all possible aspects listed before was not realistic. But it was also stated that “a theory selects a framework” and one should first decide what one wants to explore (issues) and then decide how one wants to explain it (theories).

1.2. Theorizing “Barrier Theory”

In terms of barriers to adaptation, there seems to be theoretical pluralism. Rather, “barrier theory” incorporates a collection of (other) theories (e.g. on market failure in economics or on social construction in sociology) and does not offer any theoretical value in itself. However, one should be aware of the epistemic evolution of the term “barrier” and the processes included. It was noted that the term “barrier” always points to something and at the same time away from something. In the history of the term “barrier to adaptation”, in contrast to other terms and issues in the arena of climate and climate change which were multiplied by actors such as the IPCC, it was noted that the IPCC did not use the term barrier in their headlines and used words such as failure or limits instead. In general, it was concluded that one needs a “common language” for barriers, both for academic purposes and the political sphere, e.g. for agenda-setting. However, one should be aware of the “politization” of barriers and therefore the influence of political processes on the “theory building” (what one sees as a barrier) and its reverse effects on the language of research in terms of barriers.

Starting from the notion that there is no single theory on adaptation, it was suggested that there might be theories are more suitable for certain issues (within adaptation) than others. In this respect, it is important that depending on the lense (e.g. theoretical vs. practical), different kinds of barriers become visible. Due to the interdisciplinary nature of the field, barriers noticed by researchers might differ from barriers observed by practitioners.

1.3. Research on adaptation vs. research for adaptation

It was repeatedly highlighted that one should not neglect the difference of focus between research *on* adaptation and research *for* adaptation. In contrast to research on adaptation, research for adaptation has a practical focus or intervention perspective, e.g. how adaptation measures can be turned into practice or be improved. While research for adaptation is primarily devoted to practical issues, research on adaptation also conducts work not directly “useful” for practical problem-solving and decision-making. While still, at some point, the differences seem blurry and most scientists seem to be interested in both aspects of adaptation research, it was criticized that often researchers did not make clear which position they were arguing from. Misconceptions can be avoided by clearly referring to the perspective taken, the participants agreed. Clarifying the approach can also help creating more effective adaptation research.

It was also discussed which perspective researchers should adopt. Most participants said both perspectives were equally important for their work. However, also adaptation research (on adaptation) without the immediate purpose to benefit practice is justified.

2. Expectations from Frameworks and Actor-oriented vs. System oriented Approaches

2.1. Collection of Interesting Research Issues

From the previous discussions, the participants collected issues to be discussed in more detail:

- Methods and theories used in adaptation research (depending on the purpose)
- Potential for a joint data base
- Scope and limits of theories /middle-range theories/ frameworks/joint concepts
- Why a common language for barriers?
- Actor-oriented vs. system-oriented approaches
- Disciplinary/political viewpoints as producers of different types of barriers
- Politization of the barrier concept (communication value)
- Why are barriers so difficult to understand scientifically?
- Conceptualization of barriers (level/scale/process etc.)
- Which content should be communicated to practice?
- Focus on drivers and opportunities instead of barriers

Amongst these issues, the following topics were chosen for further discussion:

1. How can and should barriers be conceptualized? (section 2.2)
2. How can actor-oriented vs. system oriented approaches be valued? (section 2.3)

2.2. Conceptualization of Barriers: Expectations from Frameworks on Adaptation

The group approached the issue of conceptualization by selecting frameworks for barriers to adaptations as a central theme. In light of the above discussion that there exists no single all-purpose framework or theory, a list of properties was collected that specific frameworks should ideally have. Depending on the purpose of research, some of these properties are relevant, while others are not. The goal of this approach was to have a tick list for the evaluation of an existing framework and its

complementation and/or a reference frame for the design of a new framework according to the expectations.

Analytical frameworks for barriers to adaptation should:

- Be capable of being meaningful for multiple disciplines
- Define “barriers” and therefore contain criteria/definitions of barriers (contribute to theory)
- Should be of use for the assessment of barriers
- Be able to include multiple levels (e.g., actor level, institutional level, socio-economic level, micro-meso-and macro level)
- Include different kinds of barriers (or rather variables which may or may not be seen as barriers)
- Be applicable to multiple adaptation types/scenarios
- Clarify the role and type of knowledge generated by the framework
- Capture the dynamics of adaptation (time and space), and should therefore relate to the emergence and evolution of barriers
- Offer a realistic representation of decision processes and do not only capture barriers at the implementation stage (represent a longer time frame)
- Ensure generic applicability across context and polities
- Identify functional relationships between barriers
- Represent actor conflicts of interests or values and therefore incorporate the practical objectives/priorities of actors with respect to adaptation
- Inform the setting of priorities for both research and practice
- Allow research both for adaptation and research on adaptation. Ideally, the framework should be useful for both practice/decision makers and for research/theory building
- It should be actor-oriented or interaction-oriented
- Be simple
- Offer a heuristic function

Key points on which may be further developed include: (a) the establishment of functional relationships and (b) processual and temporal dimensions as well as (c) the explicit role and type of knowledge one establishes by using a certain framework.

2.3 Actor-oriented vs. system oriented approaches

The discussion about the current status of actor-oriented and system-oriented approaches in adaptation research shed light on the historical status of these two approaches. At first, it resulted in the perspective that, currently, the system oriented view/research is now (sufficiently) advanced. It was appreciated that the IPCC has had a major impact in establishing and communicating insights from system-oriented research. In comparison, in the last years, most research in the field of adaptation and barriers has been actor-oriented. It was concluded that this should remain so. As much research is currently actor-oriented (and qualitative), the group speculated that one might

even say that the system-oriented view is being neglected at the moment and should be taken into account more deeply in the future.

3. Challenges with respect to barriers and possible future research questions

3.1 Challenges of Research on Barriers

In the next step the group reflected on the most pressing challenges with respect to barriers in adaptation research. “What is it that we give back in exchange for empirical data” was one of the most prominent underpinnings of the discussion that followed. In general, the challenges mentioned included a wide range of issues of both practical and theoretical nature and are shortly described in the following.

The relation between frameworks and practice, in particular of frameworks as a tool to analyze and handle barriers, was discussed in the beginning of the session. This includes considerations about the ideal make-up of a framework to analyze barriers, such as the trade-offs to be made between the objectives and the selected elements of a framework, or multiple legitimate purposes of frameworks. Often neglected elements of frameworks such as the evolution of barriers or processoral dimensions and time were mentioned. Furthermore, the relationships between actor-centered approaches and system-centered approaches (“exogenous vs. endogenous”) is an issue. It is crucial to know which barriers can be analyzed best with which approaches. The integration of the adaption and transformation of socio-ecological systems as a whole was stressed (“Transformative adaptation is about becoming. It is not simply buying a set of running shoes.”). Also the question was put forward if it makes sense to initiate a joint data collection on barriers of adaptation in order to analyze these issues further.

Consideration was given to the relevance of the barrier concept and a common language when analyzing it, whether one should make a distinction between barriers and drivers (or use “variables” instead) and the relationship of research on adaptation and research for adaptation (can it be separated and what determines their interrelationship?).

3.2 Possible future Research issues

To formulate future research needs, the group collected ideas for an imaginary project call: “If a research council would fund your project on adaptation and barriers, which issues and questions would your proposal contain?” The results can be grouped as follows.

a) Frameworks, Mechanisms, Patterns and Conditions of Barriers

The first stream of ideas related to patterns of factors, conditions and/or variables contributing to barriers, their relative importance, interrelations between these as well as the evolution of barriers in their socio-ecological context. It is of interest, for instance, how barriers and drivers are related and if it is possible or required to include both drivers and barriers in one framework. Furthermore, one may move from the framework level to the theory level to explain systematically how barriers (a) are functionally interrelated, (b) precisely shape processes, and (c) emerge and evolve. Furthermore, the relationship between power dynamics and barriers was proposed as an issue.

It was proposed to focus on empirical research, even quantitative studies, or at least conduct meta-analyses of empirical studies to find interrelationships and classifications of barriers. Other methods mentioned to gain this kind of systems knowledge were, for instance, simulations, game experiments, agent-based models or historical studies. Additionally, it was suggested to set up a program on joint data collection on adaptations as actions.

b) Multi-Disciplinary Work Instead of Inter-Disciplinary Work

It was discussed whether adaptation research should proceed primarily in a multi-disciplinary instead of interdisciplinary mode. Then, the disciplines may use their methodological and theoretical spectrum to its full effect. Although there are some interactions between issues considered in different disciplines, these interactions might not always be so strong to require emphasis in research.

To productively bring together multi-disciplinary work, however, there needs to be some common ground. This can be a joint, but theoretically light conceptualization of “barrier to adaptation”. It can also be an agreement on a joint set of cases, that is investigated from different disciplinary perspectives simultaneously, and finally being compared.

As another proposal, a research program on “endogenous dynamics” of barriers to adaptation was suggested. It includes looking at how barriers change in an action arena with/without external interventions.

c) Academic Self-Reflection (“Science-Based Internal Learning Exercises”)

It was stated that the terminology developed early in the history of adaptation research still causes confusion and could therefore be redefined. The same holds for the physical sciences and early climate models that are sometimes misinterpreted.

Research projects should take care of communication issues. This could establish a better understanding of the relationship and differences to mitigation issues. Additionally, and in order not to isolate academic research from real-life practical relevance, one could establish a system where peer review and public expert dialogues explicitly form the basis of any research proposals (prior to literature review).

With regard to the social and cultural dimension of adaptation, the input from the humanities and the arts (“the creative disciplines”) was seen as neglected so far and could be enhanced. Alternative or future climate realities would come to life via storytelling or science fiction. In terms of these cultural factors, it was also seen as important that barriers may trigger innovation as a positive aspect.

Results of Working Group C

Members of the working group:

Katrien Termeer (chair), Anna Pechan (chair), Cecilia Matasci, Johannes Klein, Kerstin Krellenberg, Maya van den Berg

Minutes by: Felix Reutter, Anna Pechan

Guiding questions of the empirical working group were the following:

1. What are particularly instructive examples for barriers?
2. In which contexts and under which conditions do these barriers occur?
3. What is particular about barriers to adaptation?
4. How can barriers be overcome?

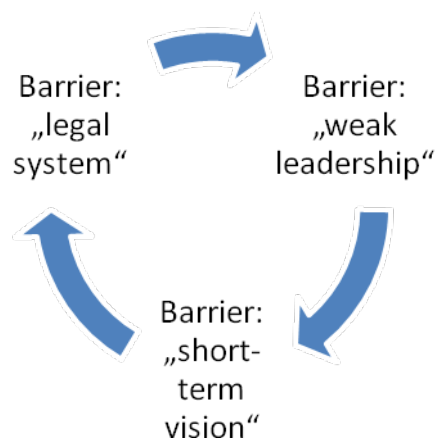
General discussion on barriers and interrelations

Regarding the first question (A) the members of the working group collected barriers to adaptation that they considered as most important from their research experiences and from the presentations the day before. These barriers were clustered as shown in the picture below (the arrows are discussed further down).



It was found that not every collected “barrier” necessarily is a barrier per se. In many cases it rather seems to be context- and process-specific (B) if a certain state or characteristic is a barrier to adaptation or not. For example it could be a barrier if there are too many scientists involved in the adaptation process but in other cases the adaptation process could substantially benefit from the involvement of many scientists (e.g. because of an improved knowledge basis). Moreover it was recognized that the existence and the amount of many barriers is also depending on the policy level which is concerned with the adaptation process. Completely different problems could matter on the local level compared to the national or international level. There was also a consensus reached within the working group that the single barriers to adaptation can be viewed from different angles in terms of their causes. For instance the cause for a barrier “lack of information” could lie in politics that is not interested in the topic of adaptation or in science that has not yet reliable findings about specific aspects of climate change adaptation.

One key result of the working group was that it makes no sense to look at the identified barriers in an isolated way. The reason for reaching this opinion was that the working group assumed that the identified barriers are generally not unique to climate change adaptation processes but that it is rather the complex set of barriers and their interlinkages among each other that is typical for climate change adaptation processes (C). Therefore the working group considered the mentioned barriers and drivers to be highly interdependent. An example to explain and illustrate this idea is the following: In one case a specific legal framework along with a lack of leadership can be a barrier to adaptation whereas in another case the same legal framework does not hinder adaptation because the existing rules are interpreted beneficially by the political leaders. Such relationships can be shown with causal loop diagrams as the following:



Based on their practical experiences the working group members connected the identified clusters of barriers corresponding to the question ‘what barriers do reinforce other barriers’ (see photo of the board above), for instance a “lack of leadership” reinforces conflicts with the “legal frameworks”. It was emphasized that the diagram of the interlinked system of barriers does not only display possible problems for a successful adaptation process but also shows that there are many entry points to brake off (sets of) barriers.

Reflections on a specific case study

To gain further insights on the empirical nature of barriers to climate change it was decided to analyze the barriers that occurred during an adaptation project in Santiago de Chile coordinated by Kerstin Krellenberg.

Facts about the project:

- Climate change adaptation project in Santiago de Chile (“ClimateAdaptationSantiago” –CAS)
- Funded by the German Federal Environment Ministry’s Climate Initiative (2009-2012)
- Project Coordination: Helmholtz Centre for Environmental Research (UFZ), Germany
- Regional partners in Chile (science and policy)
- Practical science-policy approach; series of roundtables with about 20 core actors (public stakeholders, private stakeholders, NGOs, science)
- Products: adaptation plan, manual for implementation, manual for practitioners

Through joint reflection on the case, the working group identified “barriers” which occurred during the process of developing adaptation measures. It was found that most of the identified barriers were context-specific and process-dependent so that well-designed processes and interventions during the ongoing project helped to avoid/overcome these barriers to adaptation. This is also the reason why the working group did not only list the barriers to adaptation that occurred during the project in Santiago de Chile but also noted how these barriers were overcome (D).

Barriers to adaptation (-) and possibilities to overcome these barriers (+) observed during the ClimateAdaptationSantiago project:

Step 1: Agenda setting

- Short term thinking
- Lack of awareness at administrative level
- Adaptation not mentioned as important issue
- No ministry of environment
- No Chilean research institute promoting adaptation
 - ➔ + Incentives from aboard; leadership (one person convinced others)

Step 2: Developing Strategies

- Different cultures of “workshopping”
 - ➔ + The stakeholders should be taken seriously and their opinion should be reflected in the minutes
- Getting the balance between science and practice
 - ➔ + working as simple as possible, as scientific as needed
- Continuity during the workshops, people jumped in and out but organizations itself remained
 - ➔ + Many efforts to organize commitment; to connect people’s experiences

Step 3: Decision-making

- 20 stakeholders with different perspectives / conflicting interests (prioritizing in the group difficult)
 - Restrictions on time
-

Step 4: Implementation (in the responsibility of the local decision-makers)

- a) From handing over the plan to adopting the plan
 - No sense of urgency, no priority among all decision-makers
 - ➔ + Co-drivers (local ministry) started consulting phase
 - Problem with the estimation of costs
 - Lack of power on the regional level (52 mayors concerned)
- b) Implementing the measures
 - Unclear responsibilities (cross-sectoral measures)
 - Changes of laws needed

Step 5: Evaluation and adjustment (not yet started)

Reflecting on the specific case it was concluded that barriers (and drivers) are inherently part of the adaptation process, i.e. they shape the way adaptation is planned and the outcome of the process.

Further insights

Analyzing the collected barriers (and solutions) the working group agreed on a general classification of barriers to adaptation with three categories (B, D):

1. “Micro barriers”:
Interventions in processes are possible to overcome these barriers in the short term (commitment, changing persons, practicable knowledge etc.)
2. “Meso barriers”:
Interventions are possible to overcome these barriers in the long term (adjusting legal framework, financial resources etc.)
3. “Macro barriers”:
Barriers that can't be overcome
 - a) by a specific actor/scale or
 - b) by the whole system[The working group concluded that the fewest barriers to adaptation belong to this category]

With respect to the three levels it was stated that the “absoluteness” of barriers depends on the scale. That is, barriers might be “absolute” for a single actor/ a micro-level, but ease to overcome for the level above.

Moreover it was highlighted that there might be a trade-off between “focus” on barriers in order to find ways how to avoid/overcome them and a risk to get locked-in in a “barriers-thinking” that leads to self-fulfilling prophecies.

Further research needs

Finally questions for further research were formulated:

1. How do barriers to adaptation relate to each other (in dynamic processes)?
-

2. Which set of (reinforcing) barriers are unique for climate adaptation? (No new theories are needed that consider barriers to adaptation as independent of one another)
3. How can barriers to adaptation be avoided (can they be foreseen)?
4. Does “absoluteness” of barriers depend on scales/culture? (e.g. at the level of individuals it is sometimes more easy to overcome barriers or limits than on the level of society)
5. To what extent is thinking in barriers helpful?

Results of Working Group D

Members of the working group:

Esther Hoffmann(chair), Elisabeth Hamin (chair), Liz Root, Vikrom Mathur, Ilona Otto, Lindsey Jones, Andrea Prutsch

Minutes by: Anne-Christin Ludwig, Esther Hoffmann

Working Group D focused on empirical aspects. Overarching questions for the discussions were:

1. Which typical barriers discussed during the thematic sessions can be generalized?
2. In which contexts and under which conditions do these barriers occur?
3. How can the identified barriers be overcome?

The Workshop was divided into 3 consecutive sessions, which aimed at 1st collecting and clustering ideas on barriers, 2nd deepening the understanding and 3rd synthesizing the findings.

The aim of the **1st session** was clustering and collecting typical examples for barriers to adaptation and subsequently trying to explain and generalize those. The question of what is unique about barriers to adaptation was particularly focused on during this session.

What are instructive examples of barriers to adaptation?

The participants began by collecting instructive examples of barriers and tried to provide explanations for their origin. After writing down 3-5 barriers that the participants found during their research or during the Workshop the identified barriers were clustered. 5 overarching topics were identified:

- Conflicts and interests
- Science-policy interface
- Time Scales
- Problems in knowledge bases
- Values and Preferences

Within the cluster of “*Conflicts and interests*” the mismatch in incentive structures between key actors (macro versus micro), too much entrenched property interests, unequal distribution of costs and benefits (power structure) as well as unclear property rights were examples of identified barriers.

The “*Science-policy interface*” cluster was the biggest one (9 out of 29 collected barriers) and contained barriers that may explain the missing link between science and policy and the problem of transferring scientific insights/results to practice. Examples in this cluster include: perceived need for science before action; lack of experience with risk management; lack of knowledge/uncertainty about future climate change impacts/adaptation effects as well as lack of ready-to-use “approved”

projections. It was also discussed whether the focus on barriers is a barrier in itself because it may narrow down the research perspective and lead to framings which ignore supportive factors or adaptation that is taking place.

Within the cluster of “*Time scales*” the mismatch between long-term climate change and short-term decision-making, the intangibility of climate change and the intangibility of long-term actions together with (political) insecurity were seen as barriers.

The cluster “*Problems in knowledge bases*” addressed the fact that much adaptation-related knowledge is generated within the natural science domain and that important scientific committees like the IPCC are dominated by natural scientists. This was assumed to result in a lack of understanding of societal and political processes.

The cluster “*values and preferences*” included barriers such as missing awareness, a lock-in in institutional mindsets or intractable cultural conflicts that are caused by plural narratives on adaptation strategies. It was suggested that values should not only be considered as barriers but could also serve as drivers.

The group discussed which barriers are crucial for adaptation to climate change. It was said that a barrier is always a question of definition and methodology. Furthermore it could be noticed that the opinions varied between the different participants because of their disciplinary background. Social scientists identified other barriers than economists. This discussion led to the conclusion that there is a need for guidelines and frameworks for interdisciplinary research on adaptation.

It was debated whether the strong reliance on scenarios, figures as well as numbers for costs and benefits was necessary as a basis for political action. The participants agreed on the fact that policy makers rely on numbers, and that numbers are needed in order to make things more practicable for the society and particularly for policy makers.

Are there specific or unique barriers to adaptation?

The participants discussed which barriers are specific or unique to adaptation. Some suggestions were made but the participants mainly thought that these are also relevant for other political or societal issues such as challenges resulting from sustainability or poverty reduction.

- It was debated whether it is new about adaptation that research is leading policy and that research is ahead of policy makers, in the sense that researchers discuss practical solutions although practitioners see little need for adaptation. Participants in favor of this particularity argued that with other topics are more aware and develop practical solutions before scientists give practical recommendations. Hence In other fields researchers may do more empirical research to learn from practical experience.
- Another idea was the fact that the effectiveness of decisions made during the process of adaptation and their implications cannot be evaluated directly. Only in the long term (as climate change advances) it may become obvious if adaptation decisions made were appropriate.
- The possibility of different interpretations of scenarios and climate change projections was also discussed to be a unique barrier for adaptation. This means that different actors with varying objectives can take advantage of the wiggle room that the uncertainty of climate change involves.

For the 2nd Session the participants decided to focus on the cluster “Conflicts and interest” for a detailed discussion because they felt there was need for better understanding and explaining this

barrier cluster. During this Session the goal was to identify in which contexts and under which conditions the chosen barriers do occur and how they affect adaptation. Subsequently the participants tried to think of ways to overcome these barriers.

How can barriers resulting from conflicts and interests be explained?

Answering the question of conditions and contexts under which barriers of conflicts and interests occur, various possibilities were discussed. It was said that adaptation is entangled in so many strings that it is hard to identify all of them. Climate adaptation happens at multiple levels and requires a lot of interactions between different actors which creates conflicts and interests. Conflicts of interests may occur between individuals, within one organization, between different organizations at one administrative level or between different levels or between actors belonging to different sectors.

The participants started with a closer look at barriers resulting from “conflicts and interests” and identified the following potential conflicts or conflicting interests:

- The fear to lose power, resources and /or leadership can cause a barrier and may lead to inaction because people do not want to take the risk of changes in behavior or procedures.
- Also the fear of liability for decisions which might turn out to be wrong can be a strong barrier resulting in non-action.
- Different interests among multiple actors may cause conflicts. In this context the problem of uncertainty of climate change and the variations between different scenarios were identified to support conflicts and conflicting interests because different actors may rely on different interpretations of scientific evidence to argue for their position (wiggle room).
- Moreover different goals, priorities and incentives between the national and the local level create conflicts and may hamper processes at the local level.
- Transaction cost of change may be a barrier because people and organizations prefer to keep the status quo to avoid potential transaction costs.

The participants intended to answer the question how the barrier “Conflicts and Interests” may be explained in more detail. To achieve this they decided to look at specific case studies.

Case 1: The first practical example focused on conflicts occurring in African districts (see Lindsey Jones’ Workshop paper). Here the main difficulties were conflicting interests and incentive structures between different government levels. Decision-making and the distribution of money takes place at national level but there is a clear mismatch between national and local priorities. It was said that the districts’ room for action is limited by checklists that form the basis for receiving funding at the local/district level. However these checklists may support measures that make no sense at the local level. Due to the fact that flexibility within the system is limited and due to the lack of involvement of all actors at district level, change is hindered. Institutional structures hinder change at the local level and the institutional design needs to be changed in order to encourage adaptation measures.

Case 2: The second example was about the Austrian railway company (Andrea Prutsch). The company asked the Austrian Environment Agency for information about short, medium and long term climate change effects for the region and potential adaptation measures. The company had the necessary problem awareness because it already had experience with risk management that includes natural hazards such as landslides or avalanches. In this case, the uncertainty of available data on climate change and the difficulties of transforming this data into recommendations were significant barriers. The research supported capacity building within the company but did not lead to the

formulation of recommendations for developing a strategy. Therefore barriers were not caused by a conflict of interests but resulted from problems at the science-policy interface.

Case 3: This example was contrasted with adaptation measures taken within the German railway system (see Maja Rotter et al.'s paper for the Workshop). In this system different actors are involved (Ministry for Transport, Railway Agency, railway company) and they have different interests and problem perceptions. For the railway system no strategic approach to adaptation exists but the railway agency and the railway company have initiated some adaptation measures (e.g. integrating climate change impacts in the guideline for Environmental Impact Assessment; analysis of internal standards within the railway company). For these examples different perceptions on who has to be involved and who holds decision-making power can be observed. Moreover, there is a lack of leadership and the different actors partly wait for others to take the lead in the adaptation process. For the German railway company disruptions due to weather events are less important than failures caused by other factors/events; the problem awareness is hence lower than it was described in the Austrian case. Moreover the German company has less experience with risk management approaches integrating climate-related risks, than the Austrian company.

The comparison of these examples led to the following insights:

- A closer look at institutions, institutional design, relevant actors and their specific perceptions, preferences, interests and prior experience with weather-related events is a valuable perspective to study adaptation processes and barriers to adaptation.
- A general challenge results from the difference between (the slow) pace of institutional change and the sense of urgency of change.
- Conflicts of interests become a more serious barrier to climate change under the condition that a variety of actors is involved and/or a higher number of different levels are involved.
- Conflicts of interest get more relevant the more the adaptation process advances; i.e. in the awareness rising or analysis phase they are less relevant than in the planning and implementation phase.

How can the identified barriers be overcome?

The participants discussed ideas on how to overcome barriers that result from conflicts and conflicting interests. Research on this question should be based on a theory of change and on assumptions how societal change may be reached and supported. One general idea was to identify the different actors involved with their varying interests, and to integrate and empower those actors who benefit from adaptation. This strategy would however not be possible if the benefits are lower than the costs. It was debated if actors can be more easily convinced by (a) informing them about the costs that will emerge if no adaptation measures are undertaken or (b) by drawing a positive picture of change instead of one that generates fear. The participants assumed that a clear mandate and mission for a leading organization would help to overcome conflicting interests.

Another idea was to hook adaptation to safety or health issues and to create or improve the awareness of weather-related problems. This idea resulted from the insight that previous experience with weather-related problems or risk management that integrates weather events may support the openness towards adaptation needs and actions. As was assumed for the severeness of barriers, the possibility to overcome barriers also depends on the institutional design and the number of actors involved.

The aim of the **3rd Session** was to elaborate and summarize what deeper insights for practical purposes and research could be consolidated from the discussion and furthermore what important open questions remain and on what topics the participants did not agree.

One deep insight was that the adaptation process is complex and not linear. It was concluded that the process rarely follows traditional policy or decision-making cycles. The question was raised whether these models are useful to analyze adaptation processes or whether they hamper the understanding and explanation of these complex processes. The participants agreed that it is hard to capture incentives, conflicts and political economy within these processes. It was moreover acknowledged that institutions do change and that they may be changed in order to support adaptation; institutional change does however rarely occur in the necessary scale and pace related to future climate-related threats.

The participants collected open questions for further research:

- Which characteristics of institutional design foster or hamper decision-making on adaptation?
- What kind of knowledge is blocked by organizations? Which organizational taboos hamper adaptation?
- How to effectively engage the public in adaptation planning and how to integrate local knowledge?
- Is the idea to focus on co-benefits (public health and mitigation) a suitable approach to overcome barriers?
- How to communicate uncertainty in a way that it cannot be used as an excuse for non-action? How to communicate uncertainty in co-production of knowledge and in (consultancy to) practical adaptation processes?

Ideas for further research or possible research design included the following:

Co-production of knowledge as a research approach: The participants perceived a need for co-production of knowledge through the inclusion of policy makers into the research process. It was mentioned that hardly any policy maker reads a research paper and that it is hard for researchers to give policy recommendation. Closer collaboration between researchers and practitioners may hence be fruitful to capture local knowledge and to transfer scientific insights to practitioners. The participants perceived a need for further research on the question how to integrate policy makers into the research process. It was assumed that the development of demand driven research and research on how to translate recommendations into practice could be helpful in order to close the science policy gap.

Cross-case/Cross-scale analysis: The participants appreciated the short comparison of different case studies and hence assumed that more comparative research is needed. This type of research should focus on empirical comparison of different case studies or meta-analysis on case studies. It was assumed that it would be most insightful to look at a broad variety of cases, integrating different scales and different sectors.

Guidelines/Frameworks for interdisciplinary research on adaptation: The issue of interdisciplinarity and how to organize it was discussed as a precondition to conduct valuable research that helps to overcome barriers. Research that is of collective interest needs to be consolidated. The development of frameworks for interdisciplinary research on adaptation was hence considered to represent a future research endeavor. The participants discussed guidelines for interdisciplinary research and

cooperation which may contribute to overcoming the problem that adaptation research is currently dominated by natural sciences.. It was discussed that disciplinary frameworks may become barriers themselves. Different scientific disciplines have differing views on barriers to adaptation and ways to overcome those; thus it is important to develop frameworks for including interdisciplinary views into the research process.

There were not many disagreements within the group. However some were related to the topic of whether engaging the public should be handled the same way within developing countries and industrialized countries and the degree to which public participation has an impact on policy decisions. Also the question to which degree uncertainty should be the focus of communication caused some disagreements. Some participants argued that it is important to inform practitioners openly about uncertainties of climate change whereas others were afraid that a too open presentation of uncertainties may create a barrier to action because practitioners may use it as an excuse for non-action.

Discussion of the Working Group results

The four groups presented their results in pairs of two. After the presentation of group A & B as well as groups C & D, respectively, there was room to ask questions and to discuss common and diverging points.

I) Working Groups A & B “Conceptual Focus”

In general, both groups working with a conceptual focus on barriers to adaptation came up with results that were rather similar. Both groups stressed that the framing of adaptation is of high importance. Further consideration was given to the required need for multi-, inter- or transdisciplinary research, and the extent of required collaborative research; to different modes of interaction with stakeholders in research; and to the ways in which adaptation is different from other planning processes. It was strongly emphasized that current research on barriers to adaptation urgently needs to go beyond simple enumeration and classification of barriers.

Issue: Inter-/Multidisciplinary Research

Group A was said to have approached the conceptual focus in a more interdisciplinary manner and mentioned issues such as coproduction. Group B was said to have adopted a more traditional approach, stressing that a re-focus on disciplinary expertise was more important than ever. This resulted in establishing the view that different kinds of research are needed (with clear objectives) and that it might be to some extent worthwhile to return to the disciplines and make full use of the comprehensive range of disciplinary tools and methods.

Issue: Frameworks

It was discussed if a joint research framework would have scope and potential. In this respect, the opinion of group members and also other workshop participants varied. While skepticism was expressed by some (the example of the vulnerability concept was given as an example for a case where a theoretical framework caused a lack of dynamics in its further theoretical development), others argued that one should agree on a common set of concepts and questions in order to move forward more rapidly in the research area of adaptation. Most seemed to agree, however, that it would be very difficult to agree on a framework including a particular set of research methods and disciplinary perspectives. In particular, the argument was raised that the epistemic power of frameworks might lead to a marginalization of disciplines and methods and approaches linked to it and that this would be counter-productive. If collaborative adaptation research across disciplinary backgrounds is to be undertaken, this research needs to be very precise about its objectives, and frameworks need to be chosen appropriately (including its required/possible epistemic power). It also requires a precise understanding of the appropriate level of aggregation/abstraction of adaptation research.

Issue: Research on/for adaptation

One of the many results generated during the workshop can be resumed as the importance of differentiation between research for and research on adaptation and its implications for theory and methods. In this respect, it was pointed out that while research for adaptation necessarily requires transdisciplinary work, this is not so in the case of research on adaptation. For the latter, disciplinary research might be important and an all-embracing framework might be “dangerous” in the sense of a marginalization of disciplines as well as an unwanted and monodisciplinary utilization of science. In reaction to this, it was suggested that the interdisciplinary nature of research on/for adaptation

depended on the issue. One participant stressed that the coproduction of knowledge is also a coproduction of truth and includes power issues, and that this has to be taken into account when discussing the pros and cons of inter-/transdisciplinary work. Following from this, the idea was raised that one could develop a typology of problems in adaptation research and subsequently develop possible approaches. Finally, it was stressed to consider the purpose and applicability of such a meta-framework: What use is it and is it applicable to all purposes? Is it useful in the policy context? Therefore, it was highlighted that one should not neglect to critically self-examine what use such a framework could have and also make explicit if one considers research on or for adaptation.

II) Working Groups C & D “Empirical Focus”

Science-Policy Interface

It was pointed out that a coproduction of research and practice is not always assumed to be a positive thing, since science is not neutral and its influence should not be neglected. Another participant replied that such a coproduction can make sense if it provides information required by policy-makers. On the other hand he admitted that scientists may have different opinions than politicians what information should be known by the policy. Therefore he highlighted that long-term engagement is needed and not only one-time transfers of knowledge through single workshops for instance. In this context the question was raised: “Should science provide practical solutions at all?” One participant expressed his concerns regarding researchers who act as politicians as they rather do “research for adaptation” than “research on adaptation”.

Another participant replied that actually there is no great difference between “research on adaptation” and “research for adaptation”. Others agreed on that and pointed out that the existence of an exchange between science and practice is quite normal. Furthermore it was stressed that some tension between science and policy is needed for successful adaptation projects. Nonetheless it was also admitted that it might not be useful if scientists behave like politicians and politicians behave like scientists.

However, one participant drew the attention to the fact that many public donors expect that scientific research about climate change adaptation leads to concrete action-plans for “political” measures. It was also pointed out that there are many people in the adaptation field that have changed positions from research to policy making and vice versa, and thus the distinction between science and policy is not always easy to make.

Further Research

Moreover it was remarked that there was a consensus that there is no need for new general theories on barriers to adaptation. A need to go beyond disciplinary theories or approaches might yet be needed for further research on the interlinkages between barriers to adaptation. Some interlinkages might be specific for adaptation processes.

What’s next:

At the end of the morning session some results of the working groups and paper session were discussed by the plenary.

Natural vs. Social Science in Adaptation Research

As a result from the workshop, the role of the social sciences within climate change research, and in particular in adaptation research, was discussed. In general, the workshop participants agreed that a natural science perspective was and is dominating adaptation, vulnerability and impacts research.

Consequently, one of the general recommendations is that the social sciences should claim a stronger position in agenda setting within both the research and the policy domain of climate change adaptation.

It was argued that social science adaptation research should currently put specific emphasis on an actor-centered view that investigates norms, goals, incentives, conflicts, decisions etc. in contrast to a system-oriented view. Although the latter has its own right in the social sciences, the natural science driven agenda and the discourse on vulnerability (in particular with the production of vulnerability maps) has overstressed a system-oriented view in the past.

However, it was also mentioned that (at least in the policy context, and therefore as agenda setting disciplines) the social sciences already have power and even dominance over natural sciences. But a problem was identified in the fact that these achievements of the social sciences are not honored in the context of adaptation since adaptation research is often still primarily interpreted as a technical discipline based on natural science climate change models.

Next, the issue of interdisciplinary work came up in the discussions. One participant summed up that depending on the disciplines involved, research produces different kinds of results. Following from this, one of the key questions in this respect would be, he argued, at what kind of results one wants to arrive.

Nonetheless, it was recognized by the participants (a majority of social scientists or researchers working in an interdisciplinary environment) that it is the natural sciences perspective that offers measures and indicators for climate change. Therefore it was also accepted that the natural sciences serve as an agency that, at least partly, justifies adaptation and adaptation research. In addition, it was established that it should not be the goal of the workshop to weigh and measure the disciplines in their capability to contribute to adaptation research but to see them in their own right.

Adaptation Practice and Policy

For a better understanding of practical adaptation, and organizational processes linked to it, it was suggested that practical evaluation and documentation of lessons learned should be increased as this had still not become general practice. Furthermore, it was observed that a re-framing or re-labeling of climate issues” and especially of adaptation is taking place: Adaptation as such left the political agenda but is still very present in the policy arena with single issues (e.g. flooding).

Open Questions

What remained an open question was:

- On which aggregation level should adaptation be looked at?
- Should it be looked at from the micro, meso or macro level?