

Editorial

Introduction to papers on mitigation and adaptation strategies for climate change: protecting nature from society or protecting society from nature?

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We introduce the set of papers on the theme on mitigation and adaptation strategies for climate change with some general observations on climate change and climate policies.¹ Our focus is the question of what mix of policies – including policies that have been neglected hitherto – needs to be pursued in light of the scientific evidence about climate change and the successes or failures of dominant climate policies to date. We follow a standard division in our discussion and dichotomize relevant research programs and policy approaches as either reducing climatically significant human activities (mitigation) or as enhancing the capacity of societies to cope with changing climatic conditions (adaptation).

1. Mitigation and adaptation

If nature and society are conceived as open systems, the terms mitigation and adaptation to climate change both represent forms of adjustments to changing climatic (environmental) conditions. In the case of a set of policy choices, both mitigation and adaptation denote forms of collective conduct that aim and indeed may achieve modifications in the ways in which society relates to nature and nature to society. The potentials for integrating mitigation and adaptation strategies into an analytical framework through top–down as well as bottom–up approaches are discussed by Thomas J. Wilbanks in this issue. From a social organizational perspective, adjustments may take the form of improvisation, deliberate design or constitute the outcome of fortuitous circumstances. Richard S.J. Tol adds that both mitigation and adaptation policies

¹ The papers of the thematic issue originate in a workshop sponsored by the GKSS, Geesthacht, Germany and the Karlsruhe Research Center, Institute for Technology Assessment and System Analysis, Karlsruhe, Germany held in the Center for the Advanced Study of the Humanities (KWI), Essen, Germany in 2003. We are grateful to Mrs. Doris Almenara of the Essen Center for her diligent organizational support in making the workshop a success.

reduce the impacts of climate change and should therefore be examined in terms of cost-benefit analyses of emission abatement.

Aside from these analytical and practical commonalities, mitigation in response to climate change primarily represents activities to *protect nature from society* while adaptation constitutes ways of *protecting society from nature*. Yet, despite the duality of mitigation and adaptation in practice and in debate, their strategies could well be concurrent and indeed, in the long run, adaptation and mitigation climate policies converge in their consequences.

2. Six stipulations

Initially, we list a number of stipulations about social processes in which mitigation and adaptation approaches are bound to be *embedded*—both in theory as well as in practice:

- (1) Climate change is a societal problem that has an environmental constituent.
- (2) Discussions of mitigation of climate change and, more recently, adaptation to climate change not only *share* the common premise that the climate of Earth is changing significantly but also that cultural variation is the way that human groups respond to changes in their physical and social environment.
- (3) Although policies that favor mitigation and/or adaptation strategies to climate change are both strategies that represent ways of adjustment to changing climatic conditions, policies and research foci differ rather fundamentally on what action and what outcomes are necessary.
- (4) Even if *addressed*, the changes in global climate conditions generated by past, current and near future greenhouse gas emissions will take decades if not more to *control*.

- (5) Future demographic, societal, economic and political developments will increase the vulnerability and the cost to societies of climate change and climate variability.
- (6) The political economy of nations will change.

In our view, it follows from these stipulations that adaptation is indispensable. In the next sections, we therefore will adduce further arguments supporting the view that climate research programmes and policies now need to concentrate on adaptation issues.

3. Mitigation: protecting nature from society

Mitigation policies and practices in the sense of protecting nature from societal *constraints* are a modern phenomenon. In the case of climate, efforts of the kind that we now observe designed to protect nature from society did not enter political or scientific discourse until recently, because climate was widely perceived as a robust, even self-healing process. However, in the context of contemporary scientific and political discourse the emphasis shifts: apprehended and anticipated constraints are now mainly interpreted as impacts that expose societies and its actors as vulnerable entities to environmental changes. Climate sheds its static image and is now examined as a dynamic process.

Moreover, much of everyday discourse, and discourse in the media about the environment and environmental policy, moves toward notions that emphasize disasters and large-scale risks as happenings that are natural events beyond human control. Thus, the emphases of mitigation discourse and mitigation policies resonate with discourse that invokes environmental determinism and that frames disasters as natural disasters. Moreover, mitigation discourse is frequently linked to discussions that solely stress the risks, threats and dangers that follow from human interaction with its natural environment. Ultimately, concern turns to the doom of entire civilizations, past or future.

4. Adaptation: protecting society from nature

Efforts to protect society from nature, or to engage in societal adaptation “policies”, represent a kind of anthropological constant. It therefore is sensible to suggest that adaptation is a traditional form of social conduct.

It makes sense to differentiate between intentional or unintended societal adaptation to natural conditions that involve practices and beliefs that shield human existence from the impact of environmental conditions and adaptation that ensures that nature does as society desires. Past, present and future adaptive efforts will lead both to unintended outcomes and to intentional strategies for achieving a measure of independence from climatic conditions. In this issue, Ben Orlove presents three different historical examples of how populations have dealt with the process

of adaptation by investigating the Mayas, the Vikings and the U.S. citizens during the Dust Bowl.

In the context of adaptation discourse, if attention turns to damages and responsibilities, the focus tends to be typically on *accidents*. The breakdown of customary social order, as mediated by nature, rests on human designs such as the political economy of community.

If one sets aside the issue of inertia for a moment, societal adaptation to weather and climate can take on vast array of practices and processes including those that are mainly symbolic. The questions then become how will adaptation be possible, on the basis of what knowledge, with the aid of what kinds of innovations, within what institutional arrangements, generating what conflicts within and across societies, and how far, how fast can “climate-proofing” proceed and, last but not least, what are the limitations of social systems to adapt to changing climatic conditions?

A political focus and a research program on adaptation to climate change requires a de-naturalized view of the impact of climate on society and therefore of how society should respond to changing climatic conditions. There is currently a serious mismatch between resources devoted to standard models and scenarios that deal with climate impacts, the limited utility of such scenarios for adaptation measures and the resources allocated to the development of knowledge about adaptation that is not merely derivative of standard scenarios and models.

It is the social morphology and the political economy that determine whether a natural event leads to catastrophe and significant damages or not. The almost *singular emphasis* on the CO₂ problem in the natural sciences, the *definition* of and attempted execution of political strategies as instruments toward the reduction of carbon dioxide emissions explain, however, why previous mitigation measures and the efforts of the environmental movement have had no significant effect.

5. Mitigation and adaptation policies compared

Mitigation and adaptation policies designed to reduce or even rule out risks associated with changing climatic conditions differ not only in their primary, immediate and long term strategy designed to either protect nature from society or society from nature, but they differ in other, significant ways as well. Why is it that adaptive – and not merely moderating – strategies make sense?

As the current controversy about the frequency and intensity of hurricanes (Emanuel, 2005; Pielke et al., *in press*; Schiermeier, 2005) also demonstrates, in practical terms extreme weather counts. However, it is far from evident which if any of the extremes will intensify, or will occur more frequently, at what intervals and where. Thus, the costs and benefits of both climate change and the control of greenhouse gases will be strongly differentiated both nationally and regionally. The political *legitimacy* of adaptive measures is greater, and enforceable. Adaptive

strategies take effect *more rapidly* and, as a result, the benefits become evident much more promptly. Adaptive processes have a comparatively brief *time horizon*. The gains will be more *widely distributed*. The political failure of the environmental movement to make much of a dent into volume of greenhouse gases released worldwide and in particular regions of the globe (Schellenberger and Nordhaus, 2004) signals as much.

The capacity of science and technology to *innovate* is more easily realized in adaptive measures. Adaptation is also possible without special incentives. Adaptive strategies and measures are characterized by a *lower ambiguity* concerning the kinds of tasks that are necessary and the ways in which their accomplishment can be assessed. The ambiguity in mitigation strategies may be described as the difficulties that arise in efforts to define best solutions precisely.

Scientific knowledge about climatic conditions is, as is *knowledge* generally, *uncertain and indeterminate*. Knowledge about adaptation is more robust and can likely be assimilated more readily to what might be called forms of “*practical knowledge*” (Stehr, 1992). The *risks and dangers* (Luhmann, 2005) associated with *uncertainty* are fewer in the case of adaptive measures.

As dynamics of social transformation have become greater and speedier, so too have the opportunities for adaptation. The realization of *multiple goals* by means of adaptive strategies is conceivable (e.g., Grossmann et al., 2003). Adaptive processes can become the engine of *sustainable* management and development. As a result of such action, it is ultimately possible to speak of a reduction of greenhouse gases by means of adaptation and multiple political, economic and legal strategies that may be deployed to ensure that the damages from climate change are lowered. Moreover, one can be sure that politically realistic mitigation objectives will leave most of the burden for coping with climate change to adaptation.

In this context, we are referring to warnings that catastrophic starvation will occur, or that human health will be endangered by the increase and substantial spread of contagious diseases. Social and personal characteristics and behavior patterns, however, are much more crucial in determining health than climatic conditions (e.g., Klinenberg, 2002; Reiter, 2001).

6. Conclusions

Only gradually in the recent past has attention in the scientific community and in climate policy around the globe turned to the question of adaptation to climate change. In this issue, Emma L. Tompkins and W. Neil Adger recommend that the creation of a national climate policy would be a big step towards enhancing climate change policy.

The emerging shift in research and policy reflects the realization that it is very difficult to protect the climate from society as we know it. To date, and in the foreseeable future,

the climate convention is not protecting the climate from the impact of society on the climate. It is becoming increasingly evident that a change of priorities is needed (e.g., BMBF, 2003): change from focusing singularly on protecting the climate to efforts to protect society.

A solution is presented by Richard J.T. Klein, E. Lisa Schipper and Suraje Dessai in their paper on the development of synergies of mitigation and adaptation regarding climate change. They present three research questions on how to tackle this challenge: first, a mix will have to be developed followed by the question of how to effectively mainstream the research. In addition, the analysis has to keep its focus on the financial instruments. In this issue, Roger A. Pielke, Jr. points in the direction defining “climate change” in the correct manner. In discussing a more proper definition, “climate change” can bring science, policy and politics in line again.

Finally, let us consider the stability of mitigation policies motivated by fear of climatic extremes. The mitigation efforts being discussed will not significantly affect the probability and severity of extreme events on politically relevant timescales. Therefore, the public will develop the sense that their sacrifices have borne no fruit. If the public senses their sacrifice is for naught, rebellions will be likely (of which we have some history). The likelihood of such a response by different publics grows as modern societies are transformed into knowledge societies with the accompanying loss of power of large social institutions (see Stehr, 2001).

In conclusion, the fingerprints of disasters-in-waiting are far easier to identify than the complex smudge of anthropogenic and natural climate change. Even with the Kyoto Accord in place, there will be climate change, as there has been in the past. Furthermore, the frequency and fury of extreme weather events is unlikely to be affected by implementation of Kyoto commitments. The majority of populations at risk are easy to identify. The lessons that can be applied to their protection are well studied and practiced. For the foreseeable future, *prevention of climate impacts* will need to address the social and environmental precursors that turn extreme weather events into ecological and human disasters. The risk and dangers associated with failed mitigation efforts may indeed be great. The risks and dangers of failing mitigation efforts *without* any adaptive strategies will be even more serious. Thus, much more serious and sustained work of *how* (intended) adaptation might protect society from climate is urgent.

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