



# Climate Change and Paths to Sustainability: the Role of Science-Based Stakeholder Dialogues

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## Introduction

The prospect of a major change in the earth's climate as a consequence of greenhouse gas emissions and other human actions presents one of the most demanding challenges facing humankind in the decades to come. How to cope with this problem, which will affect all regions of the world, remains an unsolved problem. It is clear that significant reductions of greenhouse gas emissions will be needed. This will require the concerted action of many players in society in order to bring about the necessary changes in technological infrastructure, human behaviour and lifestyles which will be crucial for successful mitigation and adaptation strategies.

Many sectors of industry have recognized that climate change can impact their business operations and profoundly change business environments. The insurance industry, for example, has been interested for several years in the impacts of extreme weather events. Recent floods in Italy, Germany, France and China have boosted discussions about climate change and its impact on societies. Although more reliable statistical evidence for global climate change can be put forward than the occurrence of individual extreme events (floods, storms and droughts), these are nevertheless perceived as threats should

their frequency increase in future. Oil companies also no longer deny that climate change is a serious problem (van den Hove et al. 2002<sup>1</sup>) and, together with other energy companies, are following the development of carbon trading systems and other instruments with great interest.

That the climate problem is a serious issue that must be addressed within the general framework of sustainability transition is now widely recognized both by the public and the media. Large international magazines, such as Newsweek, the Financial Times and Time magazine, reported extensively on global change in conjunction with the recent World Summit on Sustainable Development. It is also generally recognized by researchers and practitioners alike that to effect a global transition to sustainability (Kates et al. 2001<sup>2</sup>), a new approach is called for, and that this will need to address not only economic but also equity issues.

## Rio +10

The World Summit on Sustainable Development in Johannesburg in 2002 drew the attention not only of the media, but also of decision-makers, business representatives and NGOs to the dual challenge of improving people's lives and conserving our natural resources. It provided an opportunity to reflect on

what has been achieved since the creation of the UN Framework Convention on Climate Change (UNFCCC) at the World Summit in Rio de Janeiro in 1992. Although the Rio +10-record is in many respects disappointing when measured against the goals of the UNFCCC, there was nonetheless some sense that a sustainability transition could be in the making. Indications of this included the promise to cut by half the number of people with inadequate water and sanitation by 2015 and the global 15% renewable energy target proposed by the EU for 2010. Unfortunately, other important issues received less attention.

What will the situation be when world leaders meet at Johannesburg +10? Can research help in identifying trends of water use or energy technology today? And, more importantly, can we identify promising paths towards a sustainability transition? At present, we have few tools for monitoring such transitions. Without milestones and orientation, it is difficult to see whether local management practices, national policies or international agreements are leading into the right development path.

## The climate problem

The global character of the climate change problem requires an international approach to climate policy. The Kyoto Protocol established for the first time



firm commitments by the industrial nations to reduce greenhouse gas emissions by approximately 5% relative to the reference year 1990 by the time period 2008-2012. This negotiated transition from an uninterrupted increase to a decrease in greenhouse gas emissions marks a historical turning point in climate policy. Nevertheless, the Kyoto Protocol has not been accepted by all industrial nations, in particular the US, and reservations have been expressed regarding its effectiveness. The Protocol also leaves open many questions regarding future climate policy after the first commitment period.

The 10-year horizon of the first commitment period of the Protocol is short compared with the relevant time scales of the climate system, which range from decades to many centuries. Although the Kyoto agreement is a significant first step towards a precautionary policy regime, by itself it will have negligible impact on long-term global warming. Climate models indicate that global greenhouse gas emissions, in particular CO<sub>2</sub>, will need to be reduced to a small fraction of present levels within about a century if societies wish to avoid a change in climate comparable to that which occurred at the end of the last ice age (IPCC, 2001<sup>3</sup>). In the case of unregulated emissions, the predicted global warming lies well beyond the historical experience of humanity both in magnitude and rate of change.

<sup>1</sup> van den Hove, S., Le Menestrel, M. and de Bettignies, H.-C. 2002. The oil industry and climate change: strategies and ethical dilemmas. *Climate Policy* 2(1): 3-18.

<sup>2</sup> Kates, R.W. et al. 2001. Sustainability science. *Science* 292: 641-642.

<sup>3</sup> IPCC 2001. *Climate Change 2001: Synthesis Report*. 111p.



### Need for joint science-stakeholder studies

The challenge of avoiding a major change in the earth's climate must be jointly tackled by science, policy, industry, NGOs and the general public. Numerous studies have been carried out in recent years by the academic community on climate change and possible adaptation and mitigation policies. However, most of these studies have been performed with little direct interaction between the scientists and the stakeholders immediately affected by the proposed mitigation or adaptation measures. In parallel, industry has spent considerable efforts in reducing emissions, developing renewable energy technologies and implementing emissions trading schemes. Most of this work, however, has been similarly divorced from academia. No clear picture has emerged from these diverse efforts on the relative advantages and disadvantages of the various mitigation and adaptation options, let alone a consensus on the optimal strategy to pursue. The many open questions can be successfully tackled only by a joint approach combining scientific analysis with the technical and operational expertise provided by stakeholders.

### Open questions

The long-term objective of climate change mitigation is to reduce the anthropogenic greenhouse gas emissions

to a level that will prevent "dangerous interference with the climate system" (UNFCCC, Article 2). What actually constitutes dangerous climate change is a matter of debate. Is climate change dangerous when it forces people of low-lying island states to abandon their settlements? The limits of scientific reasoning soon become apparent, and the question assumes a strong moral and ethical dimension. However, science can provide insights about what would happen under which circumstances.

A second question concerns the role of technological and social learning in the implementation of climate mitigation and adaptation policies. The reduction in investments in R&D in the energy sector in recent years is regretted by many who believe that technological change is crucial for achieving low carbon societies. Others emphasize social learning and adaptation as the most critical elements, while recognizing that adaptive capacities can be very different regionally, for example between the North and the South. Energy policy is a third important question. What energy policy options for the future would be most technically feasible, economically reasonable, environmentally friendly and socially acceptable? Could carbon capturing and sequestration be an intermediate solution, or would it hinder necessary investments in renewables? Are societies ready to accept risks involved in possible nuclear-energy futures? Can poverty in the South and climate

mitigation be tackled jointly by investing in a solar hydrogen economy, as suggested by Jeremy Rifkin? Do we need a Global Marshall Fund to tackle these problems? Finding answers to these questions requires broad investigations which synthesise existing knowledge and recognize the unavoidable subjective nature of assessments of possible future energy technologies.

A fourth area of research, finally, concerns the monitoring of sustainability transitions. In order to develop effective transition strategies, to register successes and failures of attempts to alter the current socio-economic paradigms, and to give us a feeling of where we stand, we will need robust sets of data. The data needs of governments, businesses, other organizations and the general public will be profoundly different from what they have been in the past. Needed will be a global observation system based on regional samples and remote sensing data combined with ground-level observations, such as envisaged in the Sustainability Geoscope.

### European Climate Forum

The European Climate Forum (ECF) was established in July 2001 as a mechanism to bring together and engage in dialogue and joint research scientists and stakeholders representing different societal groups concerned with climate change. Members of ECF, for example, come from the coal, oil and gas industries, companies engaged in renewable energy technologies or the manufacture of energy-efficient products, major energy users (including transportation), insurance and finance sectors, environmental NGOs, and scientific institutions investigating climate change and options for sustainable development. At a recent conference of the European Climate Forum in Berlin, the open questions mentioned above were discussed and identified as urgent topics of research requiring a particularly close interaction between scientists and stakeholders.

ECF is a non-profit organization. The scientific initiators of ECF represent seven leading European research institutions in the field of climate, climate

impacts, environmental economics and energy technology. The focus of ECF joint studies is on problems associated with a strong divergence of views among different stakeholders. The goal is to bridge differences and produce joint studies that advance our state of knowledge in critical problem areas (see <http://www.European-Climate-Forum.net/>).

### Need for stakeholder dialogues

ECF has been established out of the conviction that solutions to the problems of climate change and sustainability are best found by pursuing a continuous dialogue to improve our collective understanding of the causes and consequences of climate change. David Bohm's<sup>4</sup> (1996) distinction between discussion and dialogue is helpful in understanding the special character of these science-based stakeholder dialogues. In discussions, individual views are presented and defended. Discussions can be seen as a ping-pong game: the subject of common interest is analysed from many points of view; the purpose of the game is normally to win. Winning means having one's view accepted by the group. Participants in a discussion basically want their view to prevail. In a dialogue, in contrast, the participants are not negotiating positions or trying to reach a consensus. Dialogues are based on mutual respect and on the notion that the others have a valid viewpoint. The word dialogue suggests a free flow of meaning between people. In dialogue, individuals gain insights which could not be achieved individually. Thus dialogues foster interdisciplinarity and a holistic view. Bohm argues that the greatest impact is realized through a synergy between the processes of dialogue and discussion.

Necessary conditions for a dialogue are that participants treat one other as colleagues, "suspend" their assumption, and that the process is structured by a skilled facilitator. A number of further factors are important for successful science-based stakeholder dialogues (which are equally relevant for other dialogues, e.g. in the field of management or policy making). Regular

<sup>4</sup> Bohm, D., Nichol L. (ed.) 1996. *On Dialogue*. Routledge. 128 p.



interaction with stakeholders over a longer period of time is a necessary requirement in order to create a common language and to build mutual trust. Persons who enter into dialogue regularly also develop a richer understanding of the uniqueness of each person's point of view. However, there exist no general recipes for organizing a dialogue which is beneficial for all participants. In the case of ECF, experimenting with different formats and ways of communication is seen as part of the challenge of bringing together the traditionally separate world of academic research and the stakeholder worlds of companies, NGOs and other social actors.

For scientists, the dialogues are important in two further respects: they serve to identify socially relevant research questions, and the discussions with stakeholders provide a 'reality check' for the approaches and models developed by the scientists.

**The way forward**

The ECF studies, in combination with the dialogues outlined above, will contribute to a more robust foundation for the development of long-term climate mitigation and adaptation policies, leading ultimately into a sustainable development path. The European Union, specifically, is looking for instruments and tools for sustainability

impact assessments. In future, corporate policies and business strategies will need to undergo close scrutiny both within the EU and internationally with respect to their implications for climate change and sustainability. The investigations of ECF will also contribute substantially to the work of the Intergovernmental Panel on Climate Change (IPCC).

Dialogues involving companies, NGOs, researchers and negotiators within ECF take place through larger conferences as well as smaller workshops to prepare position papers, develop future research projects and discuss the results of ongoing projects. Next year's annual ECF conference will take place at the Tyndall Centre for Climate Change Research (University of East Anglia, England) in Autumn 2003 as part of the Third Sustainability Days, the latest in a series of high profile events addressing how we can create a more sustainable way of living.



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