



Climate and Energy

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70
Themes
and
Questions for
Dialogue

Session 1: Scientific Aspects and Impact

Chair:

Jean Jouzel, Director, Institut Pierre-Simon Laplace (France)

Speakers:

- Stéphane Hallegatte, Economist, meteorologist, Météo France/Cired (France)

"Difficulties in Estimating Climate Change Impacts, and Solutions to Adapt to Them"

- Susan Solomon, Senior Scientist, National Oceanic and Atmospheric Administration (USA)

"A World of Climate Change: Yesterday, Today, and Tomorrow"

Discussant:

- Laurence Tubiana, Director, Institut de développement durable et des relations internationales (France)

Session 2: Economic Aspects and Solutions

Chair:

Jean-Charles Hourcade, Director, Centre international de recherche sur l'environnement et le développement (Cired) (France)

Speakers:

- Carlo Jaeger, Professor, Postdam Institute for Climatic Impact Research (Allemagne)

"The Looming Credibility Crisis of Global Climate Policy"

- Rich Richels, Senior Technical Executive for Global Climate Change Research at the Electric Power Research Institute (USA)

"The Need for Candor in Describing Greenhouses Gas Mitigation Cost"

- Priyadarshi Shukla, Professor, Indian Institute of Management (India)

"Aligning Energy, Climate and Development Priorities in Emerging Economies"

Session 3: Evidence from the Field

Chair:

- Claude Jablon, former Scientific Director, Groupe Total (France)

Speakers:

- Luc de Marliave, Coordinator for Climate Change, Total (France)

"The Total Carbon Capture and Storage Pilot Scheme in the Lacq Basin"

- Peter Wiedemann, Director of the MUT Program Group (Humans, Environment and Technology), Federal Research Center Juelich (Allemagne)

"Risk Potentials from Mobile Telephony, Precaution Taking and Risk Perception"

Session 4: How Climate Change is Received in Society, the Challenges and Difficulties

Chair:

- Dominique Bourg, Professor, Lausanne University, Director, Institut des politiques territoriales et de l'environnement humain (IPTEH) (Switzerland)

Speakers:

- Daniel Boy, Research Director, Centre d'étude de la vie politique française, Sciences Po (France)

"Public perception of climate change"

- Jacques Grinevald, Professor, Institut des hautes études internationales et du développement (Switzerland)

"Historical Perspective on the Overheating of Development: from the Thermo-Industrial Revolution to the Anthropocene"

The discussions concerned optimising the dialogue between scientists and society, in its broadest sense; that is, the dialogue with actors/stakeholders in government, industry, the media, and also the public at large.

Climate and energy issues are vast and yet often arcane. They are difficult to communicate to non-experts because they concern complex interactions between man-made and natural phenomena, not all of which are completely understood by science. Yet scientists in the industrialised countries (and in many others) benefit from a significant advantage, in that citizens are highly aware of, and concerned about, these issues. Indeed, it has become an article of faith among the public that global warming caused by emissions of greenhouse gases is a serious threat. These beliefs are based on countless declarations in the print and broadcast media and on the Internet, including utterances by public personalities such as popular entertainers and politicians who have only the vaguest grasp of the technical issues.

The challenge for scientists today is to help society choose its responses to global climate change. These responses range from high-level policies (e.g., introducing a tax on carbon, a cap-and trade system for emissions, limits on vehicle mileage, investing in renewable energy technologies, sequestering CO₂, etc.) to the simple practices of everyday life (shopping for food, planning a vacation, buying a car or appliance, etc.).

Fortunately, scientists already have an outstanding achievement they can use as a reference, and also as a point of departure for communications with non-scientists: the work of the Intergovernmental Panel on Climate Change (IPCC). This remarkable effort has produced an ensemble of data, analyses, models and predictions that accurately describe and, most importantly, *explain* some of the observed and projected changes in global, regional, and local climate as consequences of human activities (chiefly, the burning of fossil fuels). This body of work does not, in itself, produce clear prescriptions for future actions, but it provides a set of powerful tools for assessing the costs and benefits of such actions. These tools will be in great demand in coming years, because critical decisions need to be made soon about the how to respond collectively to climate and energy challenges. The most visible decisions will revolve around a possible follow-on to the United Nations Framework Convention on Climate Change ("Kyoto Protocol"). The fact that many of the proposed follow-on actions would entail economic disruptions and lifestyle sacrifices for ordinary citizens, and that international deliberations are taking place in the midst of a worldwide economic crisis, adds to the difficulty of the endeavour and makes it even more urgent that the scientific community provide accurate and impartial information and advice to society. The discussions at the workshop revealed a number of key concepts, caveats, and "good practices" that need to be kept in mind when engaging in a

dialogue with society on climate and energy issues:

- When making declarative statements about climate change, its consequences, and the potential for mitigation and/or adaptation, there is need to clearly and cleanly separate fact from *personal opinion*. This requires a strong ethical sense, self-discipline, intellectual rigour, and a measure of modesty. Given the complexities of climate science, non-experts are usually not capable of distinguishing what is *known* from what is, in a given scientist's opinion, *dangerous*, or *desirable*, or *easy*, or *unimportant*, or *improbable*. It may very well be the case that scientists agree on the facts, while disagreeing on interpretations, assessments, priorities and opinions.
- Engaging the public via dialogue is preferable to imposing decisions by other procedures, especially in western democracies, which have a major role to play in environmental and energy issues. This is not an easy task, since it sometimes requires admitting that not everything is precisely known, and presenting facts that are not always easy to understand. Consequently, one must reckon with unintended effects; for example, presenting the entirety of information on certain issues may actually increase, rather than decrease the concerns of the public.
- In general, when interacting with the public, scientists would do well to avoid condescending attitudes and, ideally, should favour presenting the public with well worked-out and detailed *options* from which citizens and policy-makers can choose based on their own values, priorities and constraints.
- When describing the costs and benefits of preventative or adaptive measure, it is vital to distinguish between factors that can be scientifically quantified (for example, the loss of arable land to desertification, or the impact of new taxes on the price of fuel) and those whose importance can only be established by society as a whole, based on values, experiences, and beliefs (for example, the significance of the extinction of a species, or the premature death of an elderly person, or the suffering of an asthmatic child). As an illustration of this dichotomy, conference participants considered the complexities of accurately costing measures for reducing emissions, in order to avoid future damage from rising temperatures. The degree to which the present generation has an obligation to its descendants is not subject to a purely quantitative analysis, although science can provide useful support tools for the decision-making process. Indeed, the principle of "sustainable development", which is widely accepted as a guiding one for

decisions that will affect future generations, cannot be formulated using scientific concepts alone, but must include political, economic and ethical considerations as well.

- In a similar vein, scientists need to be candid about the degree of uncertainty that surrounds many of their observations and predictions. On the other hand, scientists should not hesitate to be forthright about those things that are known to be true, and which do not merit any more research or debate. Scientists should distinguish between uncertainty that is a feature of the climate system itself (for example, natural variations in temperature or precipitation) and that which is due to incomplete knowledge, understanding, or computability.
- As the public debate over climate changes moves from consideration of general principles to concrete (and sometimes painful) actions, scientists need to be especially vigilant regarding their analyses of achievable goals and their associated costs. This concerns particularly realistic prospects for achieving large reductions in carbon emissions (especially in emerging economies) and the likelihood of being able to use renewable sources of energy on massive scales.
- Large segments of the public have become sensitised to the dangers of climate change in remote areas (e.g., glaciers in mountainous areas, the polar regions) and, on a global scale, in the rather distant future. This degree of concern may not be sustainable. As the actual costs of climate change mitigation become apparent (in terms, for example, of increasing energy prices or lifestyle constraints) a negative reaction could well emerge among some members of the public, especially if global temperatures remain stable (as they have for almost a decade), and if the price of oil continues to fluctuate, including periods during which it is relatively low. Accordingly, it is important that scientists be able to describe the potential impacts in the locations where citizens actually live and work. Given the limited spatial resolution of existing climate models, this is sometimes not feasible, so additional analytical and computational efforts would be of significant value.
- Because of the impact of climate change on economics, politics, and the life of society in general, a certain degree of controversy and disharmony have come to characterise interactions within the research community. After all, scientists are citizens as well, and those who believe that urgent action is needed to prevent global warming

are resentful of their colleagues who remain unconvinced. While this is not in itself bad or unusual, it sometimes appears in the form of an undesirable “political correctness”— a phenomenon that is deeply antithetical to the essential nature of the scientific enterprise. It manifests itself when certain phenomena or data are ignored or suppressed (for example, the potential

benefits of increasing temperature/precipitation/CO² concentration, or the efficacy of adaptation), when the negative impacts of climate change are contrived or exaggerated, when the costs of mitigation are underestimated or, worst of all, when persons with unpopular opinions are prevented from doing research, publishing or speaking freely.