

XVI Malente Symposium
Lübeck, October 8-10, 2006

**Energy, Climate, and Future Welfare –
Changing Global Dynamics**

Summary of Working Group 2 Discussions

by Johannes Linn and Cornelius Adebahr

Working Group 2	Energy Policies: Implications for Global Climate and Future Wealth
Chair:	Dr. Johannes Linn , Executive Director, Wolfensohn Center for Development, The Brookings Institution, Washington, D.C., USA
Speakers:	Prof. Dr. Anders Levermann , Potsdam Institute for Climate Research, Potsdam, Germany Prof. Dr. Peter Höppe , Head of the Geo Risks Research, Münchener Rückversicherungs-Gesellschaft, Munich, Germany Prof. Dr. Claudia Kemfert , Head, Department Energy, Transportation, Environment, German Institute for Economic Research (DIW), Berlin, Germany Dr. Alexander Golub , Senior Economist, Environmental Defense, Washington, D.C., USA

Introduction

The working group focused on the questions of what is the current and expected future state of the global climate; to what extent is energy consumption responsible for global warming; where are the scientific political debates headed, and what are the policies and institutions that can influence human behavior for long-term sustainable energy use and climate conditions.

A session was introduced with presentations by four outstanding experts, who combined scientific, economic, policy and advocacy skills and experience. The wide-ranging discussions revealed remarkable agreement among the participants (with one notable exception) on the key challenges and risks currently facing the global community in the interface between energy use and climate change. Five main issues were discussed.

Issue # 1: Global warming is clearly on the upswing with serious environmental, economic and social costs.

Drs. Levermann and Höppe presented scientific evidence that there is a global warming trend and noted that the year 2005 was the warmest year in 140 years of global temperature record keeping. They also demonstrated that there are serious risks associated with this trend:

- the melting of ice sheets in the Arctic and Greenland are leading to rising sea levels at rates more rapid than projected even in the recent past;
- increased incidence of severe weather, reflected for example in 2002 and 2005 in unusual floods and in 2004 and 2005 in a record of severe hurricanes including in areas previously free of hurricanes, have resulted in serious damages to human life, infrastructure and the environment;
- extreme heat waves, unlikely to fall in the normal range of probable occurrence, have recently led to many deaths.

The working group discussion concluded that the scientific community agrees on these trends; that they present serious risks not only in the distant future, but already today; that clear limits need to be set for global warming, with the EU ceiling of a further permissible increase of global mean temperature by no more than 2 degrees Celsius if anything too high; and that effective action needs to be taken urgently and early to assure that the ceiling is not breached.

Issue #2: There is a direct causal chain between energy use and CO2 emissions and between CO2 emissions and global warming.

Dr. Levermann informed the working group that this causal chain had already been analyzed by the Swedish scientist Arhenius in 1886. Ironically he tried to demonstrate that this was beneficial to Scandinavia by raising mean temperatures in this cold region. More importantly, the group was informed that CO2 emissions tend to rise more rapidly than energy consumption, requiring a more drastic reduction in the rate of growth of energy consumption for any targeted reduction in the growth of emissions. And given

lagged effects of past emissions, even if greenhouse gas emissions were stopped entirely today, there would be a continued global warming for some time.

A voice of dissent: As an exception to the general agreement in the working group on issues #1 and #2 a representative of the German Coal Ministry Association (Mr. Weber) asserted that (a) while global warming is happening, it is not clear from the scientific evidence that there is a link between severe weather and global warming, nor even that there is an increase in severe weather; and (b) the scientific evidence does not clearly establish that global warming is predominantly due to CO₂ emissions. In response, panel members uniformly and strongly argued that while the links and causalities are complex and to some extent uncertain, a vast preponderance of the evidence certainly points towards a clear causal chain.

Issue # 3: Policy instruments for reducing conventional energy use, CO₂ emissions and hence global warming exist and should be implemented.

There was agreement in the working group that policy instruments exist to achieve necessary changes in energy use and emissions, even though a different combination of instruments (energy efficiency, renewable energy, etc.) may be appropriate in different countries. Drs. Kempfert and Golub agreed that increased research and development (R&D) are critical, since current technology is not enough to address the global warming challenge. There currently is too little R&D, esp. in Europe and insufficient policy focus on how to raise it. According to Dr. Golub's research emissions caps and trading are the preferred instruments (better than taxes) since they encourage innovation. The experience of the EU with its emissions trading program is useful, although there were problems in its design and implementation as regards lack of transparency, lack of auctions and over-allocation of permits. There was general agreement that action needed to be taken urgently, since any impacts could be delayed by up to 30 years.

Issue # 4: The costs of limiting the growth in energy use and controlling greenhouse gas emissions are significantly less than the costs of the impact of global warming.

Estimation of costs and benefits in this area is subject to severe analytical and data constraints but according to estimates reported by Dr. Kempfert, by year 2100 the damage of unchecked global warming will impose costs equivalent to about 8% of global GDP, while the costs of controlling greenhouse gas emissions will only be on the order of 2-3% of GNP, or as little as 1% with possible future technical innovations. Dr. Höppe noted that the insurance industry has registered a significant increase in natural disasters and a related rise in insurance claims, in turn leading to increased insurance premiums. Dr. Golub observed that ex post costs of environmental controls have generally been found to be less than estimated ex ante; that past control measures have not had a negative impact on economic growth; and that ancillary benefits of environmental protection measures (e.g., reductions in pollution and related improvements in health) tend to be neglected or underestimated.

Issue # 5: Despite widespread and growing scientific agreement on issues #1-4, there is not yet the political will among key players to take the necessary and urgent actions required to avert global warming and the related environmental, economic and social costs.

Participants noted that there are conflicting interests in the global and national societies. In particular, costs of control tend to be concentrated in the short term and fall on certain countries and interest groups within countries, while the costs of not imposing limits occur in the long term and affect other countries and groups. Moreover, politicians as a rule tend to have short time horizons and hence neglect the long term implications of their actions or lack thereof. Information and public outreach campaigns are essential, and the engagement of the private sector (such as the insurance industry) is very helpful. Dramatic crises and disasters, such as Hurricane Katrina, while highly regrettable and to be avoided, may actually be necessary to swing public opinion and change political behavior. The United States is a key player – with out progress in US policies, not much will likely be achieved world -wide in the foreseeable future. Fortunately, there are some signs of an improving political climate, as a result of the public outcry after Katrina and the path-breaking actions recently taken by the State of California. Another key player is China, but the working group concluded that unfortunately it was not yet clear what might be done to entice China to do more to limit the rapid growth in its energy use and in greenhouse gas emissions.

In sum, the working group shared a broad agreement on the key linkages and impacts of energy use and greenhouse gas emissions and on the feasibility and urgency of action to control them, but there was no clarity on how to move forward to achieve the urgent global climate agenda in the world's political arena.