

Prof. Klaus Hasselmann, Max Planck Institute for Meteorology Hamburg  
Prof. Mojib Latif, Institute for Marine Research, Kiel  
Dr. Georg Hooss, Oldenburg University  
Prof. Christian Azar, Chalmers University of Technology, Gothenburg  
Dr. Ottmar Edenhofer, Potsdam Institute for Climate Impact Research  
Prof. Carlo C. Jaeger, Potsdam Institute for Climate Impact Research  
Prof. Ola M. Johannessen, Nansen Environmental and Remote Sensing Center,  
Geophysical Institute, University of Bergen  
Prof. Claudia Kemfert, Oldenburg University  
Dr. Martin Welp, Potsdam Institute for Climate Impact Research  
Prof. Alexander Wokaun, Paul Scherrer Institut, ETH Zürich



12.12.03

## PRESS RELEASE

### **Kyoto and beyond: Tackling climate change requires long-term commitments**

*a Science report published in the Special Issue -- Tragedy of the Commons?*

**The Kyoto protocol and short-term reduction targets for greenhouse gas emissions are an important first step in tackling climate change. However, these need to go hand in hand with long-term commitments. Model-based estimates up to the year 3000 show that a gradual transition to an emission-free economy is possible at an acceptable price within the next 50 to 100 years. The findings were published by several members of the European Climate Forum (ECF) in the current issue of *Science magazine* (12.12.03).**

To avoid dangerous climate change, global per capita greenhouse gas emissions need to be reduced to a small fraction of the present levels of developed countries within the next hundred years. In the worst case, if all available fossil fuel resources (conventional and exotic) are used and emissions are not reduced, model simulations indicate that the sea level could rise by about 8 meters and the average air surface temperature by about 9 degrees Celsius in the later part of this millennium.

Because of the long residence time of CO<sub>2</sub> of more than 100 years in the atmosphere, climate response is governed by cumulative rather than current CO<sub>2</sub> emissions. Important is not the detailed emissions path, but that emissions are strongly reduced over a period of 50 to 100 years. Thus the detailed reductions achieved during the Kyoto period are less critical than the start of a transition to a sustainable path of continually decreasing emissions. This requires policies extending well beyond the Kyoto horizon. Cost estimates indicate that the implementation of an effective climate policy would delay economic growth over a period of fifty years by perhaps one to two years – an acceptable price for the avoidance of dangerous climate change.

Since energy technologies are characterized by long capital lifetimes, clearly stated long-term policy goals and supporting measures are needed to influence the necessary business investments. This is important also for the public, which must understand and support the policies. For the expanding populations of the developing world, which strive to achieve the same living standards as the industrial countries, long-term policies are equally essential. A fossil-fuel-based development path for these countries would greatly increase global emissions. A number of low-emission technological options exist. Although some are already now cost-effective (for example wind), major emission reductions will require additional technologies (such as solar), which are currently more expensive. These will be developed and the costs reduced only if timely supporting policies are introduced. Alternative low-carbon development paths are in sight both for the industrial and developing world, but candidate technologies need the support of a long-term climate policy now.

Binding commitments to meet short-term emissions-reductions targets must therefore go hand in hand with clearly defined strategies to achieve significantly more stringent reductions in the longer term. A stronger focus on the long-term development of sustainable energy technologies could assist also in overcoming the present impasse of the Kyoto process and in reducing north-south inequity issues.

Original article:

K. Hasselmann, M. Latif, G. Hooss, C. Azar, O. Edenhofer, C. C. Jaeger, O. M. Johannessen, C. Kemfert, M. Welp and A. Wokaun. 2003. **The Challenge of Long-term Climate Change**. Science magazine. Vol. 302, Number 5652, 12 December 2003. ([www.sciencemag.org](http://www.sciencemag.org))

Contact: Prof. Klaus Hasselmann, [klaus.hasselmann@dkrz.de](mailto:klaus.hasselmann@dkrz.de), Tel. +49-40-411 73 236

---

*European Climate Forum (ECF) provides a platform for joint studies, dialogues and the exchange of views between scientists, corporations, companies and NGOs. The non-profit association was founded in 2001 by seven leading European research institutes in the field of climate and energy studies as well as business and NGO members. The referred paper does not represent an ECF consensus view. See: [www.european-climate-forum.net](http://www.european-climate-forum.net)*

---