

G8+5 Academies' joint statement

Climate change and the transformation of energy technologies for a low carbon future

(21 April 2009)

Climate change and sustainable energy supply are crucial challenges for the future of humanity. It is essential that world leaders agree on the emission reductions needed to combat negative consequences of anthropogenic climate change at the UNFCCC negotiations in Copenhagen in December 2009. At the same time, agreement is needed on actions to ensure basic energy services are available to all of the world's people.

These global challenges require solutions flexible and varied enough to meet the needs of a wide variety of specific energy resources and energy security circumstances.

Reducing the human forcing of climate change

The IPCC 2007 Fourth Assessment of climate change science concluded that large reductions in the emissions of greenhouse gases, principally CO₂, are needed soon to slow the increase of atmospheric concentrations, and avoid reaching unacceptable levels.

However, climate change is happening even faster than previously estimated; global CO₂ emissions since 2000 have been higher than even the highest predictions, Arctic sea ice has been melting at rates much faster than predicted, and the rise in the sea level has become more rapid. Feedbacks in the climate system might lead to much more rapid climate changes.

The need for urgent action to address climate change is now indisputable. For example, limiting global warming to 2°C would require a very rapid worldwide implementation of all currently available low carbon technologies. The G8+5 should lead the transition to an energy efficient and low carbon world economy, and foster innovation and research and development for both mitigation and adaptation technologies. Capitalizing on new technologies will require a major scientific effort and policy initiatives to accelerate adoption of new technologies. The

need to find solutions to climate change presents a huge but as yet unrealized opportunity for the creation of new jobs and for the stimulation of new and emerging markets. The role of innovation in delivering energy efficiency and a low carbon world should become a major part of the efforts to rebuild the global economy.

Adaptation to climate change

As the impacts of climate change begin to be realized, investment in adaptation technologies is becoming increasingly important, and must be increased as a matter of urgency. Knowledge and technology transfer to the developing countries must also be accelerated. Critical research areas include: increasing the resilience of urban and rural infrastructure and of natural areas (including watersheds and coastal areas); enhancing food and crop production; and water conservation technologies and methods.

The Energy Agenda

Fossil fuel sources remain the predominant energy source for the near future in reducing energy poverty and satisfying growing energy demand, and their exploitation must be consistent with the objective of reducing anthropogenic impact on climate change. Continuous improvement in efficiency and emission standards are needed in the production and use of fossil fuels.

Economically viable low carbon energy technologies may contribute to the recovery and sustainability of the global economy. Diversification of energy sources can also mitigate the volatility of fossil fuel markets and increase energy availability and security.

A low carbon economy will require integrated systems, global collaboration, and concerted actions including:

- rapid and wide-spread energy conservation measures particularly for industry, transport, and building design, construction and operation. This will require the

development and implementation of existing and new technologies, policy tools, monitoring and certification processes, and public education. Energy saving and energy efficiency should be a critical priority in the short term;

- an agreed international program to develop and deploy CO₂ capture and storage (CCS), and exploration of possible standards for CCS, with the objective of deploying CCS in as many coal power stations as possible;
- rapidly increased adoption of, and investment in, renewable energy technologies such as wind, geothermal, solar energy, biofuels and wave power. The development of standards and certification for the environmentally sustainable implementation of these technologies is essential;
- assured access to adequate supplies of natural gas, and promotion of the diffusion of efficient natural gas technologies;
- development and deployment of an innovative energy generation, transmission, storage and distribution infrastructure; and
- development of nuclear power plants that are safe and secure, and ensure the secure long-term management and disposal of waste. International collaboration in development of the next generation of nuclear reactors and in reducing the risk of proliferation is essential.

Recommendations

Recognizing the vital role that low carbon energy systems must play in facilitating a sustainable global economy, the G8+5 nations need to seize all opportunities to coordinate our simultaneous work on the climate and economic agendas, and to build global collaboration.

We call on all governments to:

- agree at the UNFCCC negotiations in Copenhagen to adopt a long-term global goal and near-term emission reduction targets that will deliver an approximately 50% reduction in global emissions from 1990 levels by 2050;

- significantly increase fundamental international research on the earth's climate, on low carbon and climate resilient technologies, and, on ways to protect and enhance the resilience of natural systems to climate change;
- identify the common strategic priorities for developing and implementing environmentally sustainable technologies for adaptation and mitigation;
- collaborate in the implementation of low carbon and climate-resilient infrastructure and technologies, and in the implementation of innovative incentives, through the use of economic and regulatory instruments, to accelerate adoption of clean "green" technologies;
- support and enable developing countries' access to and use of the technologies needed to deliver a sustainable low carbon energy future;
- pursue the development, demonstration and deployment of economically efficient and technologically safe CCS, and explore the establishment of standards for CCS;
- pursue international cooperation on safe and secure nuclear power capacity, the safe disposal of nuclear waste, and the reduction of the risk of proliferation;
- substantially increase investment into the development and deployment of technologies for adaptation, and increase funding specifically for the most vulnerable countries.

Education and public awareness programmes will be essential as we pursue this agenda. We must build on the current enthusiasm and engagement of a younger generation.

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