



COPENHAGEN 101: TECHNOLOGY

THE IMPORTANCE OF CLIMATE-FRIENDLY TECHNOLOGY

Adapting to anticipated climate change and reducing carbon emissions will require the development and deployment of advanced technologies by all countries. Over the next 100 years, the capital stock of the world's commercial energy system will be entirely replaced twice.¹ To cap greenhouse gas concentrations at 450 parts per million, as required to prevent potentially catastrophic climate change, some \$26 trillion will need to be invested in the world's energy sector between now and 2030.²

According to the 2007 assessment of the Intergovernmental Panel on Climate Change, stabilization of atmospheric carbon "can be achieved by deployment of a portfolio of technologies that are currently available and those that are expected to be commercialized in coming decades." The authors based their assertion on the assumption "that appropriate and effective incentives are in place for development, acquisition, deployment and diffusion of technologies and for addressing related barriers."³

Nations now face the challenge of initiating the right policies, incentives and investments to ensure that low-carbon technologies and services are developed and deployed. Special attention must be given to helping developing countries "leapfrog" older technologies and adopt newer, less polluting ones and to continue on the path of low-carbon development in the future as new and more effective technologies emerge.

WHAT KIND OF TECHNOLOGY IS NEEDED?

A variety of technologies need to be harnessed, improved and deployed to mitigate greenhouse gas emissions and to adapt to unavoidable impacts associated with a changing climate. Examples include:

For Mitigation

- Energy efficiency
- Carbon capture and storage
- Renewable energy
- Hybrid vehicles, batteries
- Advanced bioenergy and energy storage technologies.

For Adaptation

- New crop varieties (e.g., drought-resistant hybrids) and growing techniques
- More efficient irrigation and water storage capabilities

- Early warning and other advanced communications technologies
- Geographic information systems
- Improved vaccines for changing health vectors
- Restored natural systems on coasts and riverbanks to mitigate floods.

DEVELOPMENTS TO PROMOTE TECHNOLOGY COOPERATION AND TRANSFER

From the outset, the U.N. Framework Convention on Climate Change anticipated the need for technology cooperation and dissemination. Under the Convention, "technology transfer" is broadly defined as the act of sharing "know-how, experience and equipment for mitigation and adapting to climate change."⁴ It has been an obligation of developed countries since the signing of the accord. This concept was underscored in the 2007 Bali Action Plan by language calling for measurable, reportable and verifiable technology sharing.⁵

The climate Convention has initiated a number of measures to help promote technology cooperation and transfer.

Needs Assessments. To establish a basis for cooperation, more than 90 countries have undertaken Technology Needs Assessments.⁶ These assessments have helped identify gaps in mitigation and adaptation technology in energy, agriculture, forestry and weather-predictive modeling capabilities. The assessments have been useful in addressing national priorities and common regional and worldwide themes. The next step will be to overcome barriers and financing shortfalls identified in the needs assessments.

Global Environment Facility. The Global Environment Facility, designated as the financial mechanism under the climate Convention, has a mandate to help mobilize resources to pay the incremental costs for developing countries to acquire technologies with minimal impacts on climate. The organization has delivered \$2.7 billion in support of climate change projects, the majority for 30 different renewable energy and energy efficiency technologies.⁷ At the request of the Parties to the Convention, the Global Environment Facility has also developed a strategic framework for scaling up technology development and transfer and has just issued a request for proposals.⁸

The Clean Development Mechanism. Clean development projects encourage private investment in developing countries for energy efficiency, renewable energy and afforestation activities. This mechanism has mobilized investments of \$25 billion.⁹

National Policies. Policy instruments in technology-rich and technology-poor countries can make a significant difference in disseminating technology. Similarly, carbon caps and fiscal and tax policies offer an incentive for the deployment of clean energy technologies and production levels sufficient to bringing down costs. Export incentives, risk insurance and other measures can help disperse technology wherever it is needed. Investment in new technology can also be “pulled” through development of strong legal and regulatory frameworks that protect patents and intellectual property rights. The uptake of renewable energy technologies can also be stimulated by “feed-in tariffs” employed to give renewable an advantage in the marketplace.

Official Development Assistance. Bilateral and multilateral assistance can also play a catalytic role in demonstrating the practicality of new or adapted technology solutions in developing countries.

WHAT TO EXPECT IN COPENHAGEN

The issues of technology and climate finance will figure prominently at the 15th Conference of the Parties in Copenhagen. Developed and developing countries alike are discouraged by the failure to achieve the cooperation needed to spur technology dissemination to adequately mitigate global warming pollution and to adapt to unavoidable climate change.

Developing countries are further frustrated by the slow pace of technology transfer, lack of sufficient and predictable funding and persistent barriers to technology sharing, which they regard as immoral and burdensome. At the same time, developed nations complain that more developing countries have not instituted the kinds of national policies—such as clearly indicating respect for intellectual property rights and patents—considered essential precursors to large-scale private investment in clean technology.

It is likely that the parties will agree to create a mechanism under the convention to foster technology cooperation. This “Technology Mechanism” would endeavor to create a comprehensive international technology plan, remove barriers to technology transfer, help foster predictable and sufficient financial resources, build capacity and offer technical expertise in developing countries. Among the issues to be decided in the technology negotiations are:

Cooperative Research and Development. Whether the Technology Mechanism will reflect the agreement by developed country parties to double collective research and development budgets by 2020.

Incentive Mechanism. Whether an incentive mechanism can be created, perhaps by setting aside allowances under the developed country emission reduction targets, to reward nations that advance technology transfers to developing countries.

Intellectual Property Rights. Whether exceptions will be made to international trade and legal rules to overcome the perceived barriers of intellectual property rights and patents to facilitate the acquisition and dissemination of clean technology.

Regional Cooperation Centers. Whether regional technology cooperation centers, analogous to the highly successful Consultative Group on International Agricultural Research, should be established to help diffuse technological knowledge through regional extension services.

Multilateral Climate Technology Fund. Whether a dedicated technology fund—supported through assessed contributions, carbon markets or some other means—should be established to provide predictable, large-scale financial resources for technology transfer.

Technology is fundamental to efforts by nations to limit carbon emissions and mitigate the effects of global warming. It will be crucial for negotiators to make significant progress in identifying a plan that brings essential technologies to developing countries for measurable, reportable and verifiable emissions reductions while appropriately addressing concerns of developed nations over intellectual property rights and patents.

1 U.N. Framework Convention on Climate Change (UNFCCC), “Information Sheet on New Energy Technologies and Policies,” http://unfccc.int/essential_background/background_publications_htmlpdf/climate_change_information_kit/items/287.php.

2 International Energy Agency, “World Energy Outlook 2009, Executive Summary,” p. 11, www.worldenergyoutlook.org/docs/weo2009/WEO2009_es_english.pdf.

3 Summary for Policymakers. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, p. 16, www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-spm.pdf.

4 UNFCCC, Glossary, www.unfccc.int/essential_background/glossary/items/3666.php#T.

5 Bali Action Plan. UNFCCC, http://www.unfccc.int/files/meetings/cop_13/application/pdf/cp_bali_action.pdf.

6 Xiaohua Zhang, UNFCCC, “How IP could be part of the solution to climate change,” www.wipo.int/edocs/mdocs/mdocs/en/wipo_ip_mnl_2_09/wipo_ip_mnl_2_09_www_129938.ppt.

7 Global Environment Facility, “Focal Area: Climate Change,” p. 1, www.gefweb.org/uploadedFiles/Publications/ClimateChange-FS-June2009.pdf.

8 UNFCCC, “Interim report of the Global Environment Facility on the progress made in carrying out the Poznan strategic programme on technology transfer,” p. 2, <http://unfccc.int/resource/docs/2009/sbi/eng/03.pdf>.

9 UNFCCC, “Investment and Financial Flows to Address Climate Change, executive summary,” p. 3, http://unfccc.int/files/cooperation_and_support/financial_mechanism/application/pdf/executive_summary.pdf.

