

A CHANGING CLIMATE

UNEP has a key role to play in a broad range of activities related to understanding, mitigating and adapting to climate change. The context for UNEP's activities is provided by the UN Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol. The entry into force of the Kyoto Protocol on 16 February 2005, and progress by governments at the first Meeting of Parties to the Protocol in Montreal, Canada, in December, on finalizing the Protocol's implementation and compliance procedures and agreeing to negotiate what comes after the Protocol's expiry in 2012, marked a watershed in global action to combat the greatest environmental challenge to sustainable development.

Under the Kyoto Protocol, thirty industrialized countries party to the treaty are now legally bound to reduce combined emissions of greenhouse gases by 2012 to below 1990 levels. It also means that the international trading market becomes a reality, with the Protocol's emissions trading regime enabling industrialized countries to trade emissions credits among themselves. The Protocol's Clean Development Mechanism has now become operational, promoting investments in developing country projects that support sustainable development while limiting emissions, and the Protocol's Adaptation Fund can start to prepare to help developing countries to cope with the negative impacts of climate change.

UNDERSTANDING THE CLIMATE

Central to the Kyoto process is the Intergovernmental Panel on Climate Change (IPCC), jointly administered by UNEP and the World Meteorological Organisation (WMO). IPCC assesses scientific, technical and socio-economic information relevant for understanding and mitigating human-induced climate change. An IPCC report released in September confirmed that capturing and storing carbon dioxide (CO₂) produced by power plants and factories before it is released into the atmosphere could play a major role in minimizing climate change. Produced by the IPCC's Working Group III on Mitigation, the *Special Report on Carbon Dioxide Capture*

and Storage, written by 100 experts from more than 30 countries, concluded that many of the technological components of CO₂ capture are already mature, and that storage could account for between 15 and 55 per cent of emission reductions and reduce the costs of mitigating climate change by 30 per cent or more. To support the maximum use and understanding of the issue, UNEP also published a simplified guide to the report.

The UNFCCC recognizes that national strategies for addressing climate change can only succeed with the full engagement of all stakeholders. Article 6 of the Convention on Education, Training and Public Awareness calls on governments to promote public awareness, and asks intergovernmental organizations to support these efforts. UNEP is supporting governments' outreach programmes under Article 6 in all regions. In Africa, UNEP assistance to Ghana, Kenya and Namibia has resulted in the adoption of draft National Climate Awareness Plans, publications in local languages, radio programmes and seminars. In Asia, Cambodia has started outreach work and Malaysia has requested support. Uzbekistan has established a national climate information network, compiled training guides for students and teachers and organized workshops and seminars. Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan are working together to produce a climate change curriculum for universities and other institutes of higher education.

In Europe, Albania and Georgia have conducted needs assessments and are preparing for stakeholder workshops, and Russia has completed the first stage of its climate awareness programme by producing a climate change curriculum for universities, training guides for business, a children's competition and a guidebook for decision makers. The countries of Latin America have decided to take a regional approach through a *Handbook on Climate Change Communication Planning for Latin American Practitioners*. UNEP is also collaborating with The Energy and Resources Institute (TERI) in India to promote climate change awareness among youth in 100



Skiers make do with patchy snow on the slopes of Mount Buller, Australia, September 2005. Australia's ski industry sees itself as a frontline victim of global warming, which also threatens the country's tourism and agriculture sectors. 2005 was Australia's hottest year on record. © Simon O'Dwyer/Fairfaxphotos.com

schools in eight Indian states, and has entered into partnership with Scouts Canada and the South African Scout Association to develop a climate change action programme for Scouts associations in developing countries. Journalists from developing countries are also being trained to help them improve and expand their climate change coverage. Four African journalists were sponsored to attend the UNFCCC conference in Montreal.

ENERGY FOR CHANGE

The Outcome Document of the 2005 World Summit states that the world faces “serious and multiple challenges in tackling climate change, promoting clean energy, meeting energy needs and achieving sustainable development, and we will act with resolve and urgency in this regard.” UNEP, along with its two collaborating centres, the UNEP Risoe Centre on Energy, Climate and Sustainable Development (URC) and the Basel Agency for Sustainable Energy, implement an energy programme with a wide range of stakeholders, with support from the UN Foundation (UNF) and the Global Environment Facility, to remove market distortions, provide

access to energy markets, and accelerate the development and dissemination of technologies and processes to increase energy efficiency.

At the international level, UNEP co-hosts the Secretariat of the Renewable Energy Policy Network for the 21st Century (REN21) with the German aid agency, GTZ. REN21 is a global policy network to facilitate the rapid expansion of renewable energy in developing and industrial countries. UNEP also participates in the Global Network on Energy for Sustainable Development (GNESD), a collaboration of more than 20 centres of excellence in developing and industrialized countries noted for their work on energy, development and environmental issues. GNESD produced a series of targeted reports on energy access and conducted three follow-up regional workshops in 2005 with UNEP, the UN Development Programme and the International Energy Agency. The workshops promoted innovative policies for securing development in parallel with electrification schemes and power reforms. In 2005, GNESD also finalized a number of technical reports on barriers to renewable energy technologies.

Protecting natural capital

UNEP also released the first results of its Solar and Wind Energy Resource Assessment (SWERA) in 2005, which revealed the potential for renewable energies in the developing world. SWERA is an international collaboration of more than 25 institutions covering 13 developing countries in South America, Central America, Africa and Asia. In April, SWERA showcased a range of new information tools to US policy makers and industry representatives in Washington DC. They include detailed maps of wind and solar resources and a new *Geospatial Toolkit* that allows wind and solar maps to be combined with electrical distribution grids and other data to provide high quality information to support energy planning and policy development, while lowering the risk for renewable energy project developers.

ENERGY FINANCE

UNEP's Sustainable Energy Finance Initiative (SEFI) is giving financiers tools, support and networks to drive financial innovation that leads to the cleanest mix of energy sources and technologies. In October, the 2005 SEFI Roundtable in New York attracted 180 representatives from the international finance and sustainable energy sectors under the theme 'Creating the Climate for Change'. UNEP is also working to promote the take-up of clean and renewable energy at the grassroots level. The Indian Solar Loan Project is an innovative credit facility that, in 2005, increased by 18,000 the number of rural households in southern India that purchased solar home systems.

UNEP's Rural Energy Enterprise Development (REED) initiative in Africa (AREED) added eight new enterprises in 2005, bringing the total to 32. In Brazil, B-REED has invested in eight enterprises, including photovoltaic irrigation, solar drying and solar hot water. In China, the first CREED investment is in a manufacturer of small hydropower equipment in Yunnan province. CREED support will fund the company's production expansion allowing it to meet rural electrification needs in western China.

CREED has also begun the GreenVillage Credit project with The Nature Conservancy, providing local villagers with the household credit to purchase cleaner energy systems, such as solar water heaters, fuel-efficient stoves and biogas digesters. UNEP also began a three-year project

in 2005 to expand access to clean energy and modern telecommunications services to rural and peri-urban users in Ghana. The e-Commerce and Renewable Energy (eCARE) project is funded by UNF and Telecom Management Partner, a subsidiary of Norwegian multinational, Telenor.

In the Mediterranean, a partnership between UNEP, the Tunisian state utility, STEG, and the Agence Nationale pour la Maîtrise de l'Énergie launched PROSOL Tunisia (Programme Solaire) in March. This solar loan facility will help tens of thousands of Tunisian households acquire solar water heaters. PROSOL, funded by the Government of Italy is part of the Mediterranean Renewable Energy Programme. Since the launch of PROSOL in March 2005, 4,411 households have been installed. PROSOL Morocco was launched in December 2005.

CLEAN DEVELOPMENT

In June, UNEP, along with the World Bank's Community Development Carbon Fund and the URC, started the Carbon Finance for Sustainable Energy in Africa initiative. The \$1.2 million one-year project is designed to build public and private sector capacity in five sub-Saharan African countries to identify, develop and implement projects under the Clean Development Mechanism (CDM) of the UNFCCC. Priority is given to projects with clear community benefits. URC is also working on a step-by-step guidebook on how to prepare a CDM Project Design Document.

In Asia-Pacific, UNEP is implementing a \$2.5 million project to reduce industrial greenhouse gas emissions. The region accounts for close to half of the world's economy and with dynamic industrial growth, greenhouse gas emissions are projected to rise steeply. The four-year project is being implemented in Bangladesh, China, India, Indonesia, Mongolia, Philippines, Sri Lanka, Thailand and Vietnam. UNEP coordinates the project from Bangkok through focal points in national institutes or government agencies with experience in cleaner production and energy efficiency. The focus is on the iron and steel, pulp and paper, cement and ceramics, and chemicals sectors. An *Energy Efficiency Guide for Industry in Asia* has been produced for launch in January 2006. Portions of the guide and a CD ROM will also be available in five languages: Bahasa Indonesia, Chinese, Sinhala, Vietnamese and Thai.

ADAPTING TO REALITY

Among the most compelling evidence of the onset of climate change is the impact on the world's glaciers and ice sheets. Satellite data revealed that 2005 set a minimum for Arctic ice cover. Another report, *Fluctuations of Glaciers*, compiled by the World Glacier Monitoring Service with UNEP support, noted that "the last five-year period of the 20th century has been characterized by an overall tendency of continuous if not accelerated glacier melting." Analysis shows that glaciers in the European Alps have lost more than 50 per cent of their volume since the middle of the 19th century.

The reality of glacier melt is particularly relevant in Asia. It threatens both short-term flooding and long-term water scarcity as the freshwater locked in Himalayan ice-sheets is released at an ever greater rate. In recent years the Hindu Kush-Himalayan region and the Central Asian mountains have been severely affected by regular glacial lake outburst floods. UNEP's glacial lake outburst flood project is working to protect the region's inhabitants and preserve their livelihoods by building capacity to deal with environmental hazards associated with these events. The project is preparing an inventory of glaciers and glacial lakes, developing early warning systems and identifying adaptation and mitigation measures.

UNEP is also working through the Global Environment Facility to help developing countries, such as Haiti, Liberia and Tanzania, to prepare National Adaptation Programmes of Action in the face of climate change. UNEP and the UN Development Programme (UNDP) are bringing expertise and providing support to more than 100 developing countries. UNEP is also directly

supporting 28 countries to prepare their National Communication to the UNFCCC and 13 Least Developed Countries to develop adaptation plans.

Under a project entitled Capacity Building for the Development of Adaptation in Pacific Island Countries, a small community living in the Pacific Island chain of Vanuatu became one of the first to be formally moved out of harm's way. As climate change becomes more pronounced it is anticipated that the world will see many more environmental refugees from low-lying and flood-prone areas, arid lands and other environmentally vulnerable locations. Weather-related disasters continue to inflict an increasing toll in both human life and economic loss. Preliminary estimates for 2005, prepared by the Munich Re Foundation, one of the partners in UNEP's Finance Initiative, indicated that once again it was a record year, with insured losses costing \$70 billion and total economic damage valued at \$200 billion.



Muir Glacier, Alaska, 1941 and today. Among the most compelling evidence of the onset of climate change is the impact on the world's glaciers and ice sheets. The report *Fluctuations of Glaciers* noted that "the last five-year period of the 20th century has been characterized by an overall tendency of continuous if not accelerated glacier melting." © William O. Field/USGS/Still Pictures (above), Bruce Molnia/USGS/Still Pictures (below).