

A wide-angle photograph of a massive glacier, likely Perito Moreno, flowing into a lake. The glacier's surface is highly textured with numerous crevasses and ridges, appearing in shades of white and light blue. In the background, dark, rugged mountains rise against a clear blue sky. The foreground shows some green vegetation and a rocky shore.

LINKING ADAPTATION TO DEVELOPMENT



GLOBAL
ENVIRONMENT
FACILITY

“Communities around the globe must now take action against the ravages they face because of climate change. It is the GEF’s urgent task to empower them to find effective ways to adapt.”

MONIQUE BARBUT
CEO AND CHAIRPERSON, GEF

ABOUT THE GLOBAL ENVIRONMENT FACILITY

The Global Environment Facility (GEF), established in 1991, funds projects and programs in developing countries that protect the global environment. The GEF unites 177 member governments—in partnership with international institutions, civil society, and the private sector—to address global environmental issues while supporting national sustainable development initiatives.

The GEF is the largest financier of projects to protect and improve the global environment. To date, the GEF has allocated \$6.2 billion, supplemented by more than \$20 billion in cofinancing, for more than 1,800 projects in more than 155 developing countries and transition economies. Through its Small Grants Programme (SGP), GEF has also made more than 7,000 small grants, up to \$50,000

each, directly to non-governmental and community-based organizations. The GEF serves as the, or a, financial mechanism for the global environmental agreements, including the U.N. Framework Convention on Climate Change.

At the heart of the GEF’s work are its three Implementing Agencies—the U.N. Development Programme (UNDP), the U.N. Environment Programme (UNEP), and The World Bank—which share the credit for the GEF’s measurable on-the-ground achievements. Seven Executing Agencies also contribute to the GEF’s impact: African Development Bank (AfDB), Asian Development Bank (ADB), European Bank for Reconstruction and Development (EBRD), Food and Agriculture Organization of the United Nations (FAO), Inter-American Development Bank (IDB), International Fund for Agricultural Development (IFAD), and the United Nations Industrial Development Organization (UNIDO).

THE CHANGING CLIMATE AND SUSTAINABLE DEVELOPMENT

Vulnerable countries, communities, and ecosystems are already feeling the effects of climate change, as sea levels and temperature rise, rainfall patterns change, and extreme weather events, such as droughts, floods, storms, and other natural disasters, occur more frequently and intensively. These events not only adversely affect core development

needs, such as access to drinking water, food security, irrigation, and health, but also entire ecosystems on which all life forms depend—and they exact the heaviest toll on poor people. Because of this, many developing countries have given adaptation action a high, even urgent, priority.

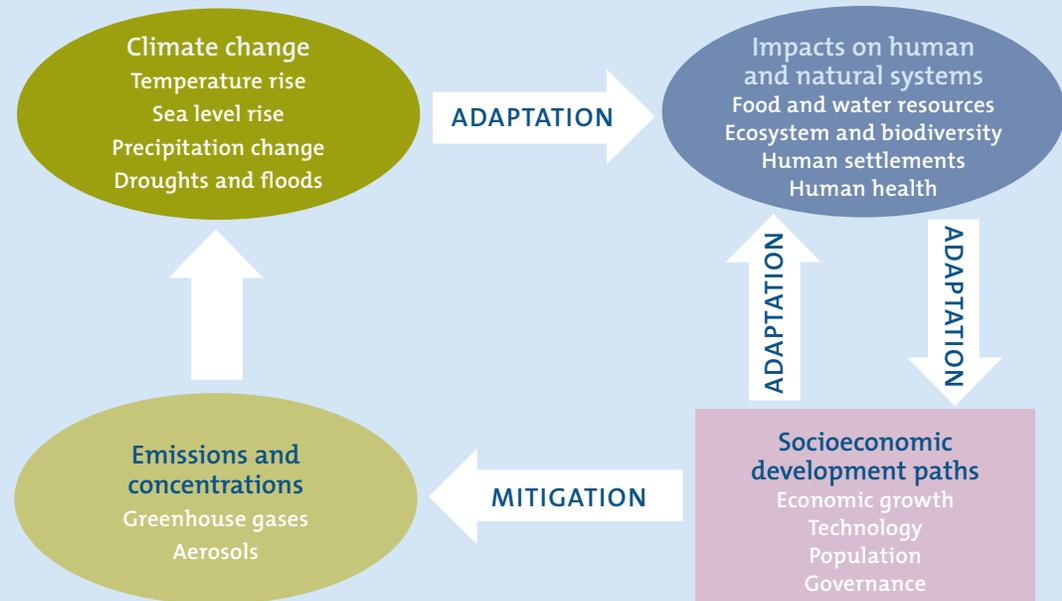
As a financing mechanism for the United Nations Framework Convention on Climate Change, the Global Environment Facility

(GEF) is committed to helping countries deal with the multifaceted challenges posed by climate change. In fulfilling its mandate, GEF pursues a two-pronged approach: it helps developing countries launch projects that **mitigate** the effects of climate change by reducing emissions of greenhouse gases; and it helps countries **adapt** to climate change by undertaking activities that minimize its adverse effects.

Farmers in drought-prone Sudan preparing irrigation channel



Climate change: an integrated framework





A family harvesting sweet potatoes, which are part of a crop diversification program in Zambezi Valley, Mozambique

AN EVOLVING STRATEGY TO HELP VULNERABLE COUNTRIES ADAPT TO CLIMATE CHANGE

Following Convention guidance, GEF's assistance for adaptation initially supported studies and assessments, because of the need for more scientific and practical information.

Over the last few years, the GEF's mandate under the Convention has changed dramatically, the result of widely documented scientific evidence on the adverse impacts of climate change. Moreover, developing countries are increasingly asking for support for urgent adaptation measures and adequate financial resources. The GEF has responded promptly to these changes.

Today, the GEF focuses on adaptation measures and concrete projects. Its work on adaptation includes managing two new funds—the Least Developed Countries Fund and the Special Climate Change Fund—that link adaptation to development, and prioritize areas of intervention that are new to the GEF. These funds complement the GEF's work on adaptation under its Trust Fund.

Whether through the GEF Trust Fund or the new funds, the GEF's approach to adaptation offers the following:

Flexible procedures and governance. With its new funds, the GEF has introduced several innovative features that emphasize flexible procedures, significantly departing from existing operational criteria of the GEF Trust Fund. Both the incremental cost approach and the requirement of global environmental benefits are absent from these funds. The GEF uses a simplified approach to access resources, including the use of a proportional ratio as a sliding scale for cofinancing. The Resource Allocation Framework is not applied to these funds. In terms of governance, programs and projects will be considered in meetings of the new funds' Council.

Focus on development. Climate change affects all sectors of development, including agriculture, health, water, and infrastructure, and, therefore, adaptation measures must be fully integrated into development projects and programs. For this, a wide range of expertise is needed. The GEF network, which includes its three Implementing Agencies,

seven Executing Agencies, and the Scientific and Technical Advisory Panel, combines skills available by engaging all relevant development institutions.

Protection of ecosystems. Adaptation must also confront the full range of related impacts on natural systems, from land degradation to watershed management and biodiversity conservation. The GEF draws on its 15 years of good practices and capacity to help identify realistic adaptation solutions and build on existing coping capacity.

Stakeholder participation and coordination. To effectively support countries in their adaptation work, coordination among all stakeholders—from government bodies to local communities—is imperative. In addition, the GEF has undertaken coordination with bilateral and multilateral agencies, as reflected in a growing adaptation portfolio with numerous partners who bring their experience to the table.

Cost-effectiveness. A successful adaptation program must streamline costs, thereby, putting funding directly to work on the ground.

Drawing on its historic base as a network, the GEF program has built-in capacity to manage cost-effectively adaptation projects:

- The World Bank is available as trustee of two new adaptation-related funds. The trustee costs are minimal given that systems for managing funds are in place for the GEF Trust Fund.
- The architecture for working with multiple agencies already exists.

Framed by these unique features, the GEF adaptation program follows several basic steps: first, gathering information through a sound scientific methodology and recognizing good practices and indigenous knowledge; second, evaluating existing policies and identifying those that increase countries' vulnerability (maladaptation); third, implementing projects that build adaptive capacity and integrate adaptation measures into development.



Stakeholders discussing a GEF adaptation project

GEF works on the ground to help developing countries reduce their vulnerability and increase their capacity to adapt to the adverse impacts of climate change.

ADAPTATION ON THE GROUND

Countries must move from climate-vulnerable to climate-resilient development, which ensures food security, access to water for drinking and irrigation, control of diseases spreading, such as malaria and dengue fever, and disaster prevention, despite a changing climate.

To help increase the resilience of human and natural systems, GEF-supported projects initially learn from and build on current good practices to cope with existing stresses and climate variability, and then implement additional measures that take into account longer-term climate change.

The transition from climate-vulnerable to climate-resilient development will not happen automatically and there will be associated costs. Coping with the adverse impacts of climate change imposes an *additional cost* on vulnerable countries in their effort to achieve their development goals. Therefore, the GEF adopted an innovative approach to financing project implementation through the *additional cost principle*, applied under the Least Developed Countries Fund and Special Climate Change Fund, which distinguishes those projects from the standard GEF practice defined by incremental costs.

GEF'S OPERATIONAL APPROACH TO ADAPTATION

The GEF adaptation program encompasses a pilot under the GEF Trust Fund and two new funds: Least Developed Countries Fund and Special Climate Change Fund. These funds are managed separately from the GEF Trust Fund with their own operational rules and procedures. The top priority for both funds is adaptation to climate change.

The Least Developed Countries Fund and Special Climate Change Fund operate through the core sectors that link adaptation and development, while the GEF Trust Fund supports adaptation projects that increase the resilience of ecosystems where climate change threatens biodiversity and other global commons, or is the cause of land degradation.

Least Developed Countries Fund

The Least Developed Countries (LDCs) are among the most vulnerable and least able to adapt to the ravages of climate change. The Least Developed Countries Fund was established under the Climate Change Convention to help these countries achieve climate-

Low-lying Pacific islands are vulnerable to sea level rises



resilient development by increasing their adaptive capacity and reducing their vulnerability.

To achieve this objective, countries first prepare National Adaptation Plans of Action, which identify activities whose further delay could increase vulnerability, or lead to increased costs at a later stage. To date, the GEF has financed the preparation of 44 National Adaptation Plans of Action and two global support projects—a total cost of about \$12 million. Once the official report is finalized and made public, LDCs can develop and submit project proposals to the Least Developed Countries Fund for the implementation phase.

Since many countries have completed or are nearing completion of their National Adaptation Plans of Action, some priority sectors have been identified: water resources, food security and agriculture, health, disaster preparedness and prevention, infrastructure, and community-based adaptation.

The National Adaptation Plans of Action implementation phase includes the design, development, and implementation of projects on the ground, to meet the adaptation needs identified in its preparation phase.

Throughout this phase, projects will be monitored to measure progress, and at project completion, a terminal evaluation will assess the effectiveness of the adaptation measures implemented.

The Least Developed Countries Fund, which is administratively separate from the GEF Trust Fund, responds to the unique circumstances of the LDCs and specific Conference of Parties guidance. It is composed of innovative elements—

- An overall approach emphasizing the link between adaptation and development
- The concept of additional cost for adaptation
- A sliding scale as a tool to simplify project submissions and costs calculations
- Existing development funds as basis for cofinancing
- Option for full-cost funding for projects
- No requirements for showing global environmental benefits
- Expedited project cycle that includes mid-sized project ceiling up to \$2 million, submission and approval on a rolling basis, and no objection-based approval.

Implementing First National Adaptation Plan of Action in Bhutan

Of the natural hazards to which Bhutan is prone, none is more significant than that of climate change's effects on glaciers, in particular glacial lake outburst floods. When these floods occur, lives are lost, houses and other infrastructure are washed away, and agriculture and pasture land are damaged.

A GEF-supported project aims to enhance adaptive capacity to climate change-induced disaster impacts in Bhutan, particularly vulnerable areas to glacial lake outburst floods: Punakha-Wangdi and Chamkar Valleys. The project, which United Nations Development Programme (UNDP) is implementing, will strengthen the country's capacity for disaster risk management and prevention, implement the artificial lowering of Thortormi Lake waters, and install an early warning system for the Punakha-Wangdi valley—all with the purpose of preventing loss of life, homes, and basic resources.

To date, the GEF has mobilized about \$115 million for the Least Developed Countries Fund. The most recent pledging meeting occurred in Copenhagen, Denmark, in April 2006. Additional pledges were made during the GEF Council meeting in June and at the GEF Assembly in Cape Town, in August 2006. Pledges have been made by Denmark, Finland, France, Italy, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

Special Climate Change Fund

Established in response to guidance received from the Climate Convention in 2001, the Special Climate Change Fund is designed to finance activities related to climate change that are complementary to those funded by GEF, in the following areas: adaptation to climate change; technology transfer; energy, transport, industry, agriculture, forestry and waste management; and economic diversification. Among these categories, adaptation has the top priority.

The Special Climate Change Fund adaptation program focuses on the following area: water resources, agriculture, health, infrastructure, integrated coastal zone management, and

fragile ecosystems, including mountain ecosystems. Priority is also to be given to capacity building for preventive measures, planning, preparedness, and management of disasters relating to climate change, including contingency planning for droughts and floods in areas prone to extreme weather events.

In 2005, the Special Climate Change Fund opened its first pipeline for submissions. As with the Least Developed Countries Fund, under the Special Climate Change Fund developing countries access financial resources to implement concrete adaptation measures to reduce vulnerability to climate change.

The Special Climate Change Fund has several innovative features:

- The overall approach that links adaptation to development
- The concept of additional costs to determine the level of funding
- A sliding scale as an optional simplified approach to calculating additional costs
- Project cycle: The Special Climate Change Fund is currently using the same project cycle as the GEF Trust Fund, except that all pipeline project reviews will be undertaken

on a rolling basis. Lessons learned from the Least Developed Countries Fund in expediting the project cycle maybe considered for application to the Special Climate Change Fund in the future.

To date, about \$50 million has been pledged for the Special Climate Change Fund. Of this amount, nearly \$34 million has already been programmed. Additional contributions are expected through subsequent pledging meetings.

Since its opening in 2005, the Special Climate Change Fund pipeline rapidly exhausted the resources available. As the Fund offers the opportunity to implement adaptation on the ground, substantial additional demand for resources is anticipated.

Adaptation Action in Key Development Sectors under the Special Climate Change Fund

Disaster Risk Management and Prevention.

GEF-supported projects in the Disaster Risk Management and Prevention area aim to integrate climate change risks into disaster and development programs. Current disaster programs of development agencies have a

better record at reconstructing damaged infrastructure than in reducing vulnerabilities and addressing their root causes. This sector program seeks to anticipate natural and climate-induced disaster risks, and enhance disaster prevention and resilience. The GEF has started an innovative partnership with the International Red Cross, with the assistance of UNDP, to develop a project in Thailand where disaster risk will be built into development planning.

Health. The GEF-supported project—Piloting Climate Change Adaptation to Protect Human Health—aims to implement a range of strategies, policies, and measures that will decrease health vulnerability to current climate variability and future climate change in seven countries having different kinds of vulnerable ecosystems: Barbados and Fiji (low-lying developing); Uzbekistan and Jordan (desert/desert-fringe); and Bhutan, Kenya, and China (highland populations). Implemented in collaboration with the World Health Organization and UNDP, the project will begin by assessing health vulnerabilities for each country, analyzing successes and failures of past health interventions under current climate,



National consultations in Gilbert and Line Islands

and then selecting and implementing locally appropriate measures.

Infrastructure. The GEF is supporting two adaptation interventions on infrastructure in two small island states in the Pacific: Micronesia and Rarotonga. Both projects, implemented by UNDP, build on what would be done for development purposes in the absence of climate change (building a road and a harbor breakwater, respectively). The road needed climate proofing intervention to cope with sea-level rise and increased precipitation, and the harbor needed to be

The GEF focuses on adaptation measures and concrete projects.

KIRIBATI ADAPTATION PROGRAM

“The sun is coming closer to my island” was one of the remarks of island representatives at the National Consultations of the Kiribati Adaptation Program, a long-term effort to assist the Central Pacific island nation of Kiribati in managing climate change. This program was initiated by the World Bank following the 2000 Regional Economic Report *Cities, Seas and Storms*, which showed that without adaptation, Kiribati could face annual losses on the order of 37 percent of GDP because of climate change.

Kiribati, one of the most isolated, least developed countries in the world, consists of 33 low-lying atoll islands spread over a vast area ocean in the central and western Pacific. With most of its land less than three meters above sea level, it is highly vulnerable to climate change and sea level rise. The poor atoll soil offers little potential for agricultural development, but the immense area of ocean encompasses some of the richest fishing grounds in the world, providing Kiribati with its most important source of revenue.

Through a participatory process, a GEF project seeks to provide the vulnerable communities of Kiribati with the information and the means to enhance their adaptive capacity. The project will support the government in enhancing its capacity to plan and implement adaptation measures to the climate-related issues facing the country, which will also reduce the detrimental impacts of climate change on the fragile atoll ecosystems.

Possible global benefits from the project include improved management, conservation, restoration and sustainable use of biodiversity, such as improved protection and management of mangroves and coral reefs, which harbor a variety of fish.

Apart from reduced vulnerability to climate change, climate variability, and sea level rise, national benefits would come from stabilizing ecosystems and improving productive capacity of mangroves and coral reefs that affect the availability of fish catch, thereby reducing economic vulnerability of those dependent on these activities and contributing to poverty reduction.

Expected project outcomes include stronger government capacity to deal with the consequences of the increasing climate risks, by fully integrating adaptation into economic planning and by enhancing legislation and regulations; and conservation and sustainable use of aquatic biodiversity through greater involvement of civil society and communities in the planning and management of the aquatic resources.



Kiribati: A dying pandanus forest resulting from saltwater intrusion

redesigned in view of enhanced extreme climate events, sea level change, and intensity and frequency of cyclones.

Tourism. Working with the United Nations Environment Programme (UNEP) and UNDP, the GEF is implementing several projects in small island states (starting in Fiji and Maldives) where tourism is the main source of income. The projects include measures encompassing ecosystem adaptation through natural resources management and mangroves restoration, as well as building codes in new hotels and resorts.

Water. In Ecuador, a GEF-supported project, which UNDP is implementing, aims to reduce the country's vulnerability to climate change through water resource management. The project aims to strengthen the policy environment and governance structure for effective water management through the integration of water-related risk management practices to withstand the effects of climate change.

Adaptation Pilot in the GEF Trust Fund

As required by the United Nations Framework Convention on Climate Change in 2001, the GEF established pilot projects to show how

adaptation planning and assessment can be practically translated into projects that provide real benefits, and integrated into national policy and sustainable development planning.

As a result, the *Strategic Priority Piloting an Operational Approach to Adaptation (SPA)* was established with an initial contribution of \$50 million, and was designed to support demonstration projects that address adaptation and generate global benefits in the GEF focal areas: biodiversity, climate change, international waters, and land degradation.

In **biodiversity**, the highest priority is given to coral reefs and forest ecosystems as well as highly vulnerable protected areas as identified in the scientific literature. The GEF works to combine adaptation and biodiversity concerns, as seen in the Kiribati Adaptation Project (see box on page 8).

The land, population, and biodiversity of Kiribati, a small Pacific island state, are some of the most vulnerable in the world. A GEF project is exploring how to integrate cost-effective adaptation measures into economic planning and ecosystem management. Some global benefits of the project are conservation,

restoration, and sustainable use of biodiversity, such as management and protection of mangroves and coral reefs, which harbor a variety of fish.

Combining **climate change mitigation and adaptation** in one project is possible when the climate change affects water resources in a country where the energy supply is mostly hydroelectric. Adaptation measures in the water sector will reduce the risk that the country will need to switch to fossil fuels for energy supply.

In Colombia, the water resources of Las Hermosas Massif in the central range of the Andes are experiencing severe impacts of climate change, because of glacier retreat. The GEF's Integrated National Adaptation Project is investigating the use of adaptation measures to maintain the environmental services of that mountainous ecosystem, and in particular its ability to regulate water for hydropower generation.

In **land degradation**, priority is given to integration of climate change risks into sustainable land management planning in Africa, the region most vulnerable to climate

change, and other countries in states of emergency. In Mozambique, a GEF-supported project (which the World Bank is implementing) is integrating climate into sustainable land management to reduce the impacts of extreme events on populations and ecosystems. In post-tsunami Sri Lanka, a GEF-supported project (which IFAD is implementing) is helping tsunami-affected ecosystems to be rehabilitated to provide full ecosystem services, including adaptation against extreme climatic events.

The area of **international waters** emphasizes integrated coastal zone management, such as wetland restoration.

LOOKING AHEAD

Given its history, structure, mandate, and governance, the GEF is uniquely positioned to support adaptation. The GEF combines the requisite financial competence, broad mandate on environment and development, flexible structure, and range of institutional partners essential to define, implement, and evaluate adaptation projects. Moreover, the GEF, which neither implements nor executes projects, is a neutral entity. As vulnerable

countries tackle the complex needs for adaptation to climate change, the GEF is on the ground and ready to help.

Looking toward the future, there are many avenues for the GEF to explore regarding adaptation activities.

GEF Trust Fund. There is a growing demand for adaptation components of projects that emphasize sustainable land management. The World Bank umbrella project TerraAfrica already includes a significant adaptation component. In biodiversity, lead conservation groups have proposed a partnership with the GEF to support adaptation of ecosystems at risk. Opportunities to design and implement long-term, sustainable projects inclusive of an adaptation component at the water basin level are under consideration in the international waters area.

Enhanced Development Focus. The Least Developed Countries Fund and Special Climate Change Fund will focus on adaptation and development interventions at the sectoral level. Among all sectors, agriculture is the one that encompasses the highest level of knowledge on vulnerability and adaptation. The GEF

expects that the largest number of project proposals under the Special Climate Change Fund will be in agriculture, which many believe has the potential for the highest impacts.

Private Sector and Insurance. The GEF is exploring the opportunities to work with the private sector on adaptation. One immediate opportunity is to test the agriculture insurance index developed by the World Bank and discuss possible cooperation with re-insurance companies interested in building codes and partnering with governments—a discussion started between the World Bank, a Swiss re-insurance company, and the government of Ethiopia, with GEF participation.

Stronger Partnerships. Because of the link between adaptation and development, the GEF is exploring innovative partnerships with organizations that historically have not worked with the GEF, such as the Red Cross and the World Health Organization.

It is also essential to maintain ongoing partnership with development agencies: including bilateral agencies, which are fine-tuning their adaptation strategies to be consistent with the GEF and vice-versa; and multilateral

ADAPTATION MEASURES IN THE ANDES

Glacial retreat in the Andes is happening at an alarming rate. At lower mountain altitudes, climate change is leading to deterioration of watersheds and water recharge capacities, increased likelihood of flash fires, and biotic changes in ecosystem thresholds and composition. Furthermore, the combined impacts of global warming, El Niño Southern Oscillation, and extreme weather events on mountain hydrology are diminishing the water flow used by populations downstream and are likely to have devastating impacts on highland and associated downstream ecosystems, altering the ecology and livelihoods of millions of people.

A GEF-supported project, which the World Bank is implementing in Bolivia, Peru, and Venezuela, supports regional efforts to implement adaptation measures in the Andean highlands and related river basins, addressing climate effects on people's lives and countries' economies. Priority interven-

tions will focus on vulnerable highland and coastal glacial-dependent watersheds, and regions of mutual interest to participating member countries.

The project will support assessing future climate scenario impacts on key ecosystems, and selecting ongoing or planned governments programs highly vulnerable to the impacts of climate change. It will build

analytical capacity for policy and project evaluation that can be expanded subsequently to include other sectors. Likely areas for immediate intervention are watersheds, and consequent impacts on hazards to life and property, watershed ecology and desertification, water availability for hydropower, human consumption, and productive use—for example, irrigation, agricultural productivity, fishery, and food security.



Glacier in the Peruvian Andes in 1980 and from the same position in 2002. Cordillera Blanca, Peru

agencies, especially the International Development Association, which finances development of highly vulnerable countries. Finally, the G8 Investment Framework of the World Bank includes adaptation as its third pillar and recognizes the GEF's significant role, emphasizing that more resources are needed for adaptation.

The Adaptation Fund. The management of the Adaptation Fund is under discussion within the context of the Climate Convention and the Kyoto Protocol. The GEF submission to the Convention Secretariat documented its availability, capacity, and necessary flexibility to manage the Adaptation Fund.



Because of the frequency of extreme events in Zambezi Valley, Mozambique, farmers often have to deal with cycles of floods and droughts

Photo Credits

Front cover: Tui de Roy, Minden Pictures

page 1: Ed Kashi

page 2: ECM Fernandes, ARD World Bank

page 3: Maarten van Aalst

page 4: Maarten van Aalst

page 7: Maarten van Aalst

page 8: Maarten van Aalst

page 11: Bryan and Mark Lynas, Still Pictures

page 12: ECM Fernandes, ARD World Bank

Writer: Bonizella Biagini

Editor: Carollyne Hutter

Design: Patricia Hord, Graphik Design

Printing: Jarboe Printing

Copyright October 2006
Global Environment Facility
1818 H Street NW, Washington, DC 20433

The text of this publication may be reproduced in whole or in part and in any form for educational or nonprofit uses, without special permission, provided acknowledgment of the source is made. The GEF Secretariat would appreciate receiving a copy of any publication that uses this book for its source. Copies may be sent to the GEF Secretariat in care of the address above.

No use of this publication may be made for resale or other commercial purposes without prior written consent of the GEF Secretariat. All images remain the sole property of their source and may not be used for any purpose without written permission from the source.



For more information, contact:

Global Environment Facility
1818 H Street NW
Washington, DC 20433 USA
Tel: 202-473-0508
Fax: 202-522-3240
Email: GEF@GEFweb.org

www.theGEF.org