NEWSLETTER OF UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO IN RUSSIA

Special Edition

Global Environment Facility: 20 Years of Investments in Environment

GLOBAL ENVIRONMENT FACILITY 20 YEARS INVESTING IN OUR PLANET

INTERVIEW WITH MONIQUE BARBUT

GEF IN RUSSIA

GEF IN THE WORLD

Energy security, climate change and environmentally sustainable development have steadily gained visibility and attention at the national as well as international level. Today, they are at the forefront of the global policy-making agenda and action. How to reconcile legitimate human and countries' aspirations for social and economic development with the finiteness of resources, with which our planet is endowed, has become the true overarching challenge for the global community today.

The Global Environment Facility (GEF) marks its 20th anniversary this year. It is a great pleasure for me to express through this dedicated issue of the UNIDO in Russia Magazine, our congratulations and appreciation to the GEF for its leading role in helping countries to adopt policies that will allow a transition towards an environmentally sustainable low carbon developmental path at the country, regional and global level.

UNIDO, as the specialized agency of the United Nations with the mandate to promote and support sustainable industrial development, has been working closely with the GEF in addressing global challenges associated with energy, climate change, phasing out of ozone depleting substances and the production of the persistent organic pollutants in the Russian Federation and the countries of the Commonwealth of Independent States (CIS).

I am convinced that this issue of the UNIDO in Russia Magazine will enable readers to gain a better understanding of the work carried out by the GEF on the ground, in cooperation with its partners, including implementing and executing agencies. It demonstrates the GEF's pivotal role in providing technical assistance and financial support to projects and programmes in different focal areas, and in particular, in the pressing and important field of energy and climate change at the country level.

In closing, I am confident that this special issue of the Magazine will not only be instrumental in advocating the role and impact of GEF projects, but will also make a significant contribution to generating ideas for new initiatives in this field, as well as strengthening the valuable partnership between GEF, the Russian Federation and the CIS countries.

Kandeh K. Yumkella
UNIDO Director-General

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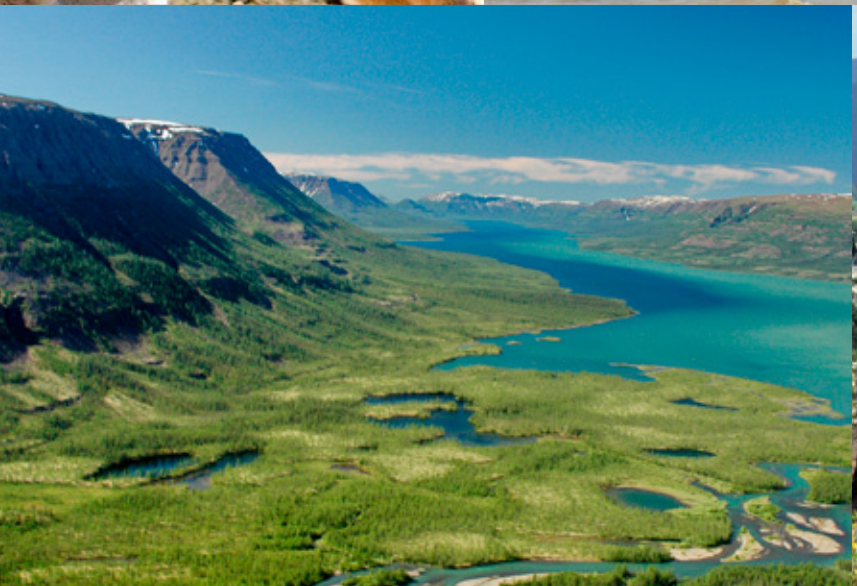


INTERVIEW WITH MONIQUE BARBUT

UNIDO in Russia (UR): Dear Monique, could you please tell us who created the GEF?

Monique Barbut (MB): That was actually long before I joined the GEF as the CEO and Chairperson. Let me give you a short lecture in the history of the GEF: The Global Environment Facility was established in October 1991 as a $1 billion pilot program in the World Bank to assist in the protection of the global environment and to promote environmental sustainable development. The GEF was designed to provide new and additional grants and concessional funding to cover the so called "incremental" or additional costs associated with transforming a project with national benefits into one with global environmental benefits.

The United Nations Development Programme, the United Nations Environment Program, and the World Bank were the three initial partners implementing GEF projects.

In 1994, at the Rio Earth Summit, the GEF was restructured and formally moved out of the World Bank system to become a permanent, independently operating institution. The decision to make the GEF an independent organization enhanced the involvement of developing countries in the decision-making process and in implementation of the projects. Since 1994, however, the World Bank has served as the Trustee of the GEF Trust Fund and provided administrative services.

As part of the restructuring, the GEF was entrusted to become the financial mechanism for the UN Convention on Biological Diversity and a financial mechanism of the UN Framework Convention on Climate Change. In partnership with the Montreal Protocol of the Vienna Convention on Ozone Layer Depleting Substances, the GEF started funding projects that enable the Russian Federation and nations in Eastern Europe and Central Asia to phase out their use of ozone-destroying chemicals.

The GEF subsequently was also selected to serve as financial mechanism for two more international conventions: the Stockholm Convention on Persistent Organic Pollutants in 2001 and the United Nations Convention to Combat Desertification in 2003.

UR: Who finances its work?

MB: It's the international community. The GEF is a trust fund that has been replenished 5 times since its inception in 1991. In April last year, 34 donor countries — including Russia with a contribution of $10 million — approved the fifth replenishment of $4.3 billion, a 52% increase vis-à-vis the level of the fourth replenishment.

UR: How is GEF structured?

MB: The GEF Assembly is the governing body of the GEF, in which representatives of all member countries participate. It meets every three to four years, and is responsible for reviewing and evaluating the GEF's general policies, the operations of the GEF, and its membership. Ministers and high-level government delegations of all 182 GEF member countries take part in the meetings.

The GEF Assembly selects a subset of its members to serve on the GEF Council. The GEF Council functions as an independent board of directors, with primary responsibility for developing, adopting, and evaluating GEF programs. Council members representing 32 constituencies (16 from developing countries, 14 from developed countries, and two from countries with transitional economies) meet twice each year for three days and also conduct business by mail. All decisions are by consensus. The Council's open door policy toward non-governmental organizations and representatives of civil society makes it unique among international financial institutions.

I am heading the GEF Secretariat which is based in Washington, D.C., and which reports directly to the GEF Council and Assembly, ensuring that their decisions are translated into effective actions. The secretariat coordinates the formulation of projects included in the work programs, oversees its implementation, and makes certain that operational strategy and policies are followed.

GEF projects are implemented by the following 10 agencies: United Nations Development Programme, United Nations Environment Programme, the World Bank, Food and Agriculture Organization, Inter-American Development Bank, United Nations Industrial Development Organization, Asian Development Bank, African Development Bank, European Bank for Reconstruction and Development, Inter-

national Fund for Agricultural Development.

An independent GEF Evaluation Office (www. http://www.thegef.org/gef/eo_office) is also located in Washington, D.C., and reports directly to the GEF Council. Its goal is to improve accountability of GEF projects and programs and to promote learning, feedback, and knowledge sharing. The Office has responsibilities in three main areas: 1. Evaluation — independently evaluating the effectiveness of GEF projects and programs 2. Norms — establishing monitoring and evaluation standards 3. Oversight — providing quality control for monitoring and evaluation by Implementing and Executing Agencies of GEF projects and programs.

UR: Who are GEF's main partners?

MB: The GEF is one big partnership itself, being an independently operating institution that unites 182 member governments in partnership with international institutions, nongovernmental organizations, and the private sector. Even though we work mainly through the 10 implementing agencies mentioned above, we do have a lot of direct interactions with the member countries themselves as well.

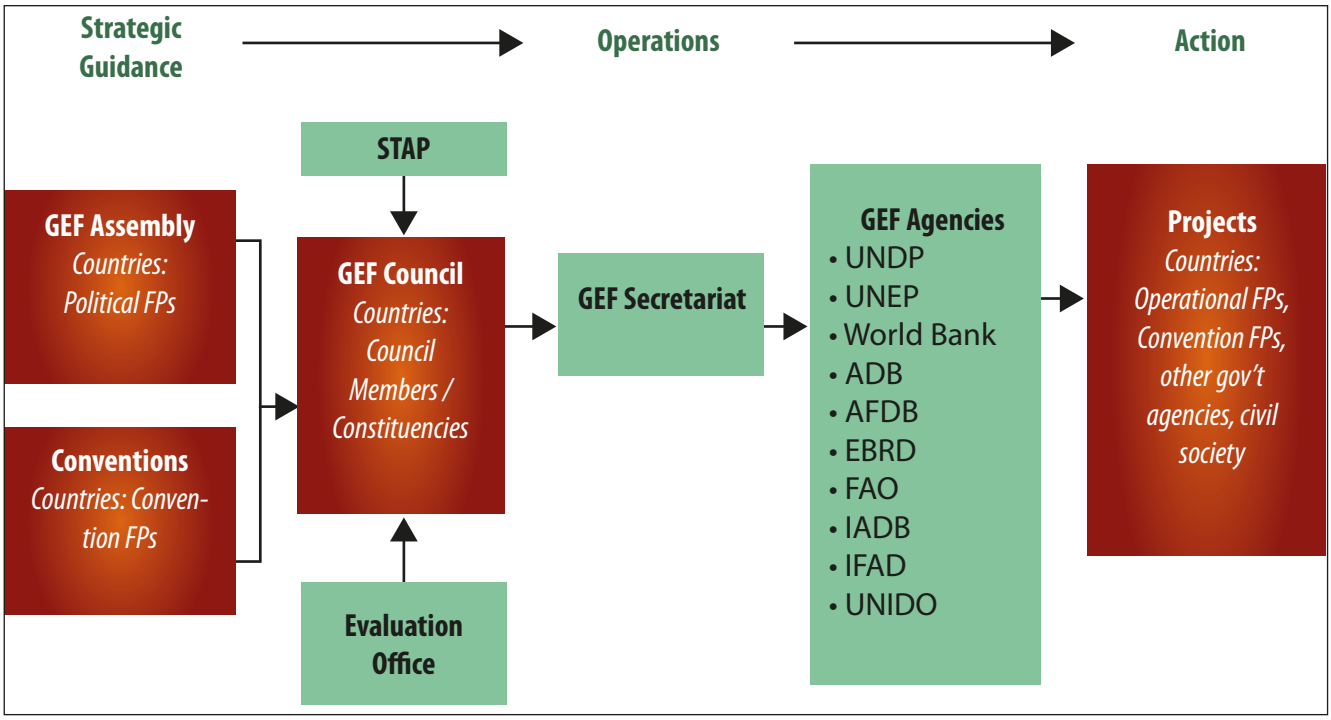
UR: What is the main focus of GEF today? Could you tell our readers about the main focus of your work.

MB: As our tagline says — we are investing in our planet. That means that as the largest public funder of environmental projects worldwide we are covering a wide range of topics. We are working in six focal areas, in Biodiversity, Climate Change, International Waters, Land Degradation, Ozone Layer depletion and Persistent Organic Pollutants. I would not want to single out any of them at the disadvantage of another, however it is true that topics such as Climate Change and Biodiversity for example have gained significant priority over the last couple of years, whereas the Ozone layer portfolio on the other hand has not grown symmetrically

UR: How do you decide on whether to fund this or that project? Who usually initiates projects?

MB: One of our main underlying principles of operation is country ownership. Countries themselves initiate projects, not us, nor any of the implementing agencies. Being an independently operating financial organization, the GEF provides grants to developing and emerging countries for projects related to biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants. These projects benefit the global environment, linking local, national, and global environmental challenges and promoting sustainable livelihoods. The GEF is mainstreaming approaches so they are in line with the agreed environmental conventions of the United Nations. The proposals coming from the countries via these agencies are then scrutinized by our staff in the GEF secretariat in Washington, DC, and checked against the countries' own national priority programs as well as against the policies outlined in the respective UN conventions to which they relate.

As I mentioned before, the GEF receives its funding from 35 international donors who in April 2010 have agreed to provide $4.3 billion for the



5th replenishment cycle of the GEF from 2010-2014. These funds will be invested by the GEF in the six focal areas. In each of these focal areas there are hundreds of different ways to finance remedies to environmental ills, ranging from projects to support sustainable urban transportation in Kathmandu, introducing energy efficient light bulbs in Morocco, or even to undertake emergency evacuations of endangered Koala bears from the earthquake affected areas in China. It takes a synergistic approach between environmental sectors to multiply positive impact which the GEF has been following throughout its history. Thanks to this approach, if the GEF invests one dollar in the protection of the biodiversity of mangroves, the same dollar is simultaneously invested in the carbon retention capacity of mangroves. Thus, with one dollar we create at least a two dollar intervention. We also rely on a large group of experts and scientists to design the GEF strategies (i.e. STAP, the Scientific and Technical Advisory Panel — see: http://www.thegef.org/gef/STAP), as well receive guidance from UN conventions to help countries to prioritize their interventions in order to be as effective as possible.

UR: What is GEF's agenda/strategy for the 21st century?

MB: We did lay out our strategy for the next four years for which we secured funding with the fifth replenishment process. There are six strategic elements identified in the GEF way forward. While reflecting the various strengths that the GEF has developed, they also point towards areas where the GEF needs to enhance its involvement:

(a) Continuing as a key operating entity of the financial mechanism of the major global environmental conventions by providing assistance to a large number of countries through a comprehensive approach employing investment, technical assistance and scientific assessment, and by embodying an integrated approach that links different conventions and focal areas;

(b) Functioning as the coordinator and/or manager of several funds, building on the track record of managing funds entrusted to the GEF by the United Nations Framework Convention on Climate Change (UNFCCC);

(c) Pioneering combinations of grant and non-grant instruments to support investments of a transformative scale;

(d) Maintaining focus on innovation, catalyzing supporting cutting-edge technologies and policy reforms with the objective of enabling replication and scaling-up;

(e) Enhancing engagement with the private sector, building upon advances made in GEF-4 through the Earth Fund; and

(f) Refining focal area strategies to reflect the emerging scientific and policy understandings.

UR: You have the opportunity to study and compare the ecological problems of different countries. What are the common matters and the specific aspects countries have? Can you name countries that could serve as role models, and why?

MB: The nature of environmental challenges is global, such that there is no country on this planet which is not affected by a changing climate for example. Our response to these changes helps countries to either mitigate these changes or adapt to it. The GEF provides funding for incremental costs of environmental projects to achieve global environmental benefits. These projects are based on national priorities that are formulated by the countries themselves and therefore may differ significantly from each other. However, as they are in line with the objectives and approaches of the UN conventions, there is a certain common agreement as to what needs to be done and how.

Countries are dealing with their environmental challenges the best they can. Some are more successful, and others still need to step up their efforts considerably in order to cope with the scope. I would prefer not to single out one country, but I can give you a couple of examples where our cooperation with UNIDO was particularly effective.

UR: What in your view is the ecological situation in Russia in comparison to other countries?

MB: Russia harbors vast expanse of undisturbed ecosystems and is very rich in freshwater resources. The country is a repository of globally significant biodiversity hosting 14 Global 200 Ecoregions, eight in their entirety. It has more forests than any other single country on the planet — in total 22% of the world's entire forest cover is located in the Russian Federation, covering an area larger than the entire continental United States. Low population density in the Russian Siberia and Far East secures large territories of intact nature which are important global depositories of biodiversity and carbon sinks.

Such natural wealth at times results in underestimation of environmental risks both among the society and at the policy level and consequently in insufficient pace of economic and technological modernization.

Commodity-driven type of economy dependent of energy and resource intensive industries is the major threat to the health of Russia's environment and biodiversity. This is reflected in Russia's Adjusted Net Savings index that falls far below the world and European average. Russia remains one of the world's most energy-intensive economies with its exports dominated by oil and gas and other raw materials. Inadequate enforcement of ecological

standards and mixed performance of businesses reliant on resource extraction contribute to the problem. This situation has been recognized by the Russian Government and a strong course towards modernization throughout economic sectors has been announced. There are no easy or trivial solutions on this path of modernization. GEF has been assisting Russia in many arrays including policy building, green standards, energy efficiency, work with extractive industries and promotion of low carbon technologies.

Russia's environmental policies and environment management systems has been undergoing major and continuous reform for the past two decades. These reforms are still ongoing being influenced by complex processes linked to economic transition, administrative restructuring, global financial crisis and development agendas.

Russian forest management planning and protected areas system dates back to the 18th century with a very strong tradition for strict protection regimes ("zapovedniki") and relatively good protected areas coverage. At the same time, most recent Russian policy trends tend towards modernization of the protected areas system through integration into broader socio-economic context and community inclusion. This is an important area where international experience and tools could be effectively utilized securing a balance of development benefits and conservation. One example of the GEF's work in Russia is our project in the Komi republic — World Natural Heritage Site — addressing financial sustainability and efficiency of protected areas system.

Russia's role in global climate change agenda can't be overestimated. The country is the world's forth-largest emitter of greenhouse gases (GHG), after China, the US and India, and its per capita emissions are higher than Japan, Germany, or the UK. Having ratified the Kyoto Protocol in 2004, the country provided the crucial share of total global emissions (17.4%) that were needed to push the agreement into force. On the other hand, with approximately 825 million hectares of forests and about 370 million hectares of peatlands Russia's ecosystems accounts for the largest national contribution to the world's natural carbon store.

Russia's position on climate change issues have emerged over the past two years from being ambivalent to a constructive and supportive to the global agenda with clear national priority setting. Although Russia remained conservative towards available carbon finance options, it has been meeting its Kyoto targets. Russia's action on CC mitigation is demonstrated through a set of new strong national energy efficiency policies and legislation adopted in 2009-2010: a Climate Doctrine, a new Federal Law on energy efficiency, a new Energy Strategy and others. This policy development process resulted in setting up ambitious energy efficiency targets: 40% reduction of the energy intensity of the GDP and increased share of renewable energies in the national energy balance by 2020. President Medvedev reconfirmed Russia's intention to work on energy efficiency and climate change mitigation even in the absence of an international post-Kyoto agreement. In 2000-2008 energy intensity of the Russian GDP has been reduced at 5% annually, which is greater than in many other countries. GEF has been responding to these policy targets with a comprehensive programming portfolio of energy efficiency projects in buildings, industries and appliances.

Adaptation to climate change became the key focus of the Russian Climate Doctrine adopted in 2009. Russia's geographic expanse and diverse climatic conditions throughout its 83 provinces calls for locally tailored climate monitoring, vulnerability assessments and adaptation response. Clearly, Russian Arctic is a priority region for climate studies and early adaptation response. Unlike other Arctic states, Russian Arctic regions harbor large industrial centres and relatively large population. Therefore, Arctic development strategies and adaptation programmes need to encompass measures to secure vulnerable ecosystems and to ensure human security. Mountain regions in the Caucasus and Altay-Sayan and steppe ecosystems in the Southern Russia are also important focus for the climate change adaptation work.

UR: Could you kindly tell us about the main projects GEF currently has in Russia?

MB: Over the past 19 years, throughout the pilot phase and four replenishment phases GEF-1 to GEF-4, the GEF has provided $351.9 million for projects in the country, and regional and global projects that have involved the Russian Federation. This funding has leveraged almost $1.5 billion in co-financing. The direct country support amounts to $247 million, having leveraged $919 million in co-financing.

The largest funding support was provided in the Climate Change Focal Area, with $93 million, followed by Biodiversity Focal Area with $86 million, Chemicals Focal Area with $76 million, and International Waters with $71 million. The remainder of $26 million went into Multi-focal Area projects, creating multiple environmental benefits.

UR: You participated in the International Tiger Conservation Forum in St.Petersburg in November of last year. Please tell our readers about your impressions. Will GEF support the Tiger conservation programme?

MB: The GEF has been a pioneer partner with the World Bank and others in the development of the Global Tiger Recovery Program (GTRP). At

the GEF, we are ready to move with the World Bank attending to the priorities of the 13 Tiger Range Countries. A certain number of them have come forward with commitments to program some $35 million of their GEF country allocations for action on behalf of the tiger. If these projects make sense, the GEF will be ready to support them. If these investments are designed to produce benefits for biodiversity beyond the tiger and also result in the reduction of emissions from deforestation and forest degradation, the GEF could provide countries with an additional $12 million from our REDD+ incentive mechanism, as well some support to a needed coordination mechanism at the regional level.

Therefore, we could be approaching close to $50 million in potential GEF grant resources for this initiative, provided that the appropriate co-financing leverage is secured. We believe that such a significant commitment by the GEF is definitely bound to attract the necessary resources from other donors and from the countries themselves. However, this more ambitious scenario requires that a suitable governance structure among donors, tiger range countries and other significant players is agreed on.

Specifically, one that is conducive toward directing resources strategically to countries. We firmly believe that such a structure is essential. Otherwise, as we have seen in other cases recently, the fragmentation of resource delivery will work against the objectives of the program and will make it difficult for countries to access what they need.

This is a natural progression from the early investments we have made in the development of the GTRP and supporting the Tiger Summit in St. Petersburg. As it has been the case from the beginning, our implementing partner for this initiative will be the World Bank, but we also expect national executing entities as well as qualifying NGOs to make significant contributions to this effort, including through additional financial resources.

UR: You also had a working lunch with Prime Minister Putin. What topics did you discuss?

MB: We had indeed a very nice meeting in a friendly atmosphere where we focused specifically on the Global Tiger Recovery Program and on the GEF program in Russia more generally. We also had a series of discussions with further representatives of the Russian Government to look at past achievements and future opportunities in our joint work for the environment in the Russian Federation.

UR: What projects is GEF planning to implement in Russia in the near future?

MB: Currently there are 15 projects ($103.4 million in GEF grants and $541 million in co-financing) approved by the GEF Council in various stages of final design and preparation for implementation for coming months. Out of them 9 projects ($82.9 million in GEF grants and $453.2 million in co-financing) are actually ready for the start now. One of the key GEF investment in climate change focal area (CC Focal Area) is the "Energy Efficiency in the Russian Federation Programme", which would facilitate market transformation towards more a more energy efficient economy through the promotion of efficient technologies and practices in key sectors. Various projects of the programme, implemented by UNDP, EBRD and UNIDO will improve energy efficiency in industry, buildings, and lighting through regulatory support, investment, and capacity development at the federal, regional, and local levels. This umbrella program will cover the entire spectrum of the building sector, including the building envelope, the

energy-consuming systems and appliances used in buildings for heating, cooling, lighting, including appliances, as well as building operation and energy consumption during building operation. In industry, the project will promote the deployment and diffusion of energy-efficient technologies and practices in industrial production and manufacturing processes, focusing on GHG-intensive industries.

In the biodiversity focal area the project "Mainstreaming Biodiversity Conservation into Russia's Energy Sector Policies and Operations" will, in long-term, help the energy sector operations in Russia to have improved capacity to minimize their adverse impacts on biodiversity so that the conservation prospects of the affected ecosystems are greatly improved. The immediate project outcome will be to assist RF to mainstream biodiversity conservation priorities into Russian energy sector development policies and into the operations of energy production sectors through pilot activities in 6 demonstration areas of the country.

Another example of a project, combining GEF resources from two Focal Areas (BD and IW), is the "Integrated Natural Resource Management in the Baikal Basin Transboundary Ecosystem Project", aiming at integrated natural resource management of Lake Baikal Basin ensuring ecosystem resilience, reduced water quality threats in the context of sustainable economic development.

One of the first GEF 5 projects in Russia, to be considered by the GEF Council for funding is the "Russia Energy Efficiency Financing (REEF) Project". Russia possesses a huge untapped energy resource — energy efficiency (EE). A 2008 World Bank Study (World Bank/IFC. "Energy Efficiency in Russia: Untapped Reserves." December 2008. World Bank) found that Russia could reduce its total energy consumption by 45% or in absolute terms — by 294 million tonnes of oil equivalent, which will translate into CO_2 emission reduction of 793 million tonnes per year. Achieving Russia's full EE potential could cost a total of $320 billion to the economy, but would result in annual cost savings to investors and end users of about $80 billion. By realizing its EE potential Russia can save 240 billion m^3 of natural gas; 340 billion kWh of electricity; 89 million tons of coal; and 43 million tons of crude oil and crude oil equivalents in the form of refined petroleum products. The project would aim at greenhouse gases reduction through the removal of barriers related to energy efficiency investments in the industrial and municipal sectors.

UR: Monique, you head a major international organization, devoting all your time and energy, but manage to remain a very elegant woman. How do you manage this? Is it hard for a woman to be a CEO?

MB: The way I dress is my way also to show that I am a woman AND a CEO simultaneously. There is a difference between a man and a woman so that should be acknowledged. I haven't given up being a woman just because I had ambitions.

And you are asking if it is hard for a woman to be a CEO? Well, if you see that only 15 of the 500 largest companies in the world are managed by women you might think that it is more difficult for a woman to become a CEO than for a man and run a large organization successfully. However as a woman when you have to be a wife, a mother, a friend, a cook, maybe even a gardener and a successful CEO all within the same 24 hours you start believing that nothing is impossible. I also apply this philosophy to my work. If you believe in the cause you are fighting for nothing can stop you.

UR: You are an effective manager. What makes a good manager?

MB: Regardless of the gender of the CEO there are a number of qualities and skills that make a CEO a good manager. You have to have a vision and be able to sell it, you have not to be afraid to reinvent the rules; you have to focus closely on achievements; show courage under fire; and turn challenges into opportunities. But my greatest strength is my staff. I believe the smartest decision a CEO can make is to hire a strong and competent management team, and to trust and empower them.

UR: …and what human touch or principals should a CEO have?

MB: The same as everybody else should have: A respectful way of treating others, at work as well as in their private lives. On top of that as a CEO you have also the responsibility to ensure that your organization doesn't run on pure business interactions only, by opening up space for the human touch to flourish, to inspire and motivate excellent overall performance.

UR: Would you like to wish something to the readers of our Magazine?

MB: You see, to care for the protection of the environment to keep it in a way that our future generations can sustain a healthy life on earth as well needs more than the GEF. It needs each and every one of us to believe in the possibility of a sustainable development of our civilization and working towards it at the personal level. Hence, I wish that this message will be heard by the readers of this magazine and spread much further eventually.

UR: We are grateful for taking the time to do this interview.

UNIDO in Russia Magazine
Interview with
GEF CEO Monique Barbut

20 YEARS OF GEF INVESTMENTS IN RUSSIA

GEF and Russia

The Russian Federation (RF) always played one of most prominent roles in the GEF, which celebrates its 20th anniversary this year. The country is a repository of globally significant biodiversity, hosting fourteen of the world's "Global 200 Ecoregions" (9 terrestrial, 3 freshwater and 2 marine ecoregions), and eight of them in their entirety (Olson and Dinerstein, 1998). 65% of the Russia's territory is considered virtually untouched by economic and other human activities, whereas 20% of the territory has suffered considerable human impact.

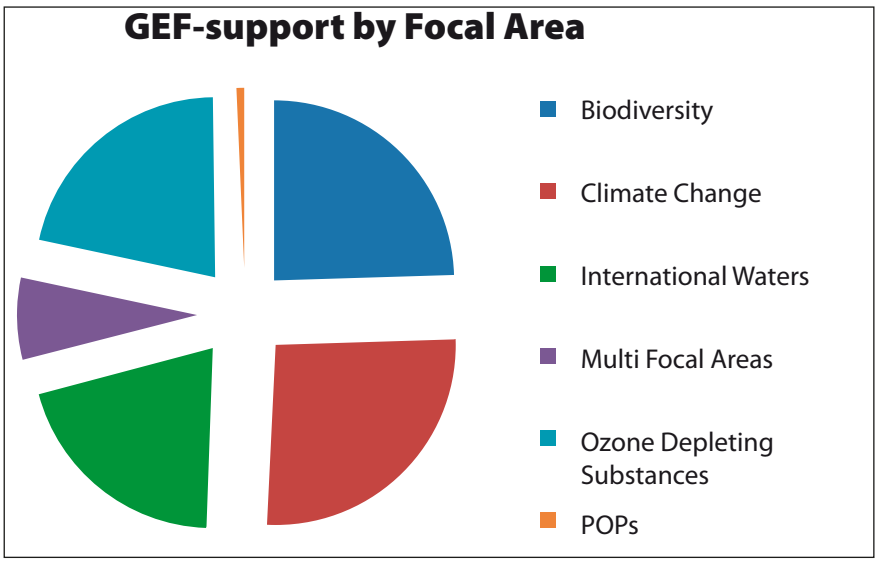
Over the past 19 years, throughout the pilot phase and four replenishment phases GEF-1 to GEF-4, the GEF has provided $351.9 million for projects in the country, and regional and global projects that have involved the Russian Federation. This funding has leveraged almost $1.5 billion in co-financing. The direct country support amounts to $247 million, having leveraged $919 million in co-financing.

Project Scale	GEF support (million USD)	Co-financing amounts (million USD)
Russian Federation (RF)	247.0	919.3
Regional projects involving RF	83.2	497.3
Global project involving RF	21.7	41.6
Grand Total	351.9	1,458.2

GEF focal areas

The largest funding support was provided in the Climate Change Focal Area, with $93 million, followed by Biodiversity Focal Area with $86 million, Chemicals Focal Area with $76 million, and International Waters with $71 million. The remainder of $26 million went into Multifocal Area projects, creating multiple environmental benefits.

In the Biodiversity Focal Area the focus was given to strengthening the system of protected areas (6 projects) and to conservation of specific eco-



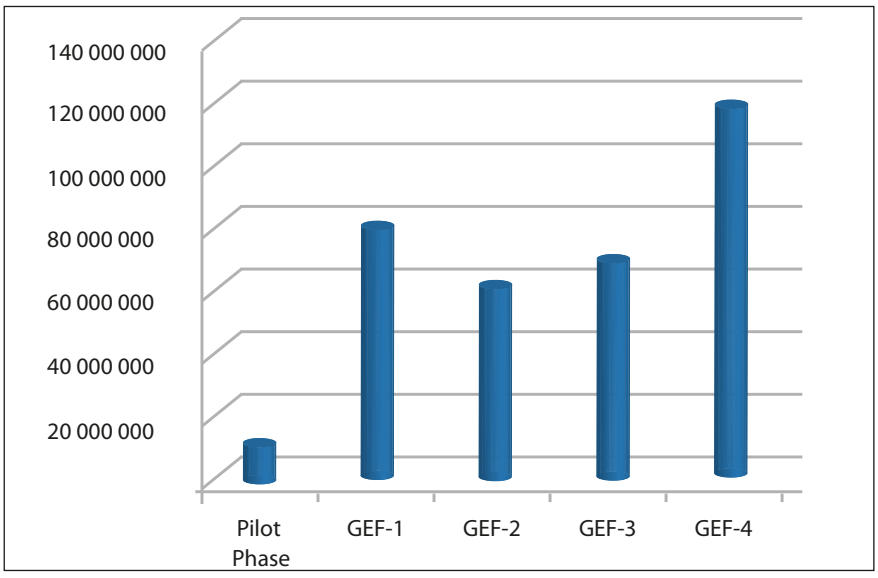
systems (3 projects); other interventions were aimed at species conservation and mainstreaming biodiversity into productive sectors.

Under the project "Demonstrating Sustainable Conservation of Biodiversity in Four Areas of Russia's Kamchatka Oblast" GEF is successfully helping Russia to secure the globally significant biodiversity values of the Kamchatka Peninsula. The project is demonstrating approaches for sustainable and replicable conservation of biodiversity in four existing protected areas as a model for a sustainable system of protected areas in Kamchatka. Innovative financial mechanisms to support sustainable management of PAs were tested, implemented and replication and dissemination of best practices and lessons learned are underway.

The Russian Steppe, the largest area of this Biome in the world with a rich plant and animal biodiversity, is facing major threats from habitat conversion. The GEF funded project "Improving the Coverage and Management Efficiency of Protected Areas in the Steppe Biome of Russia" will result in at least 1.8 million hectares of additional Steppe habitat under protection, which represents a significant global benefit in this important ecosystem.

In the International waters Focal Area Russia was and still is an active partner — beneficiary as well as co-financier — in critical GEF investments into development and strengthening of multi-state cooperative framework on shared freshwater and marine systems, resulted in jointly agreed Strategic Action Programmes and notable pollution reduction and ecosystem recovery.

The GEF supported through the project "Persistent Toxic Substances (PTS), Food Security and Indigenous peoples of the Russian North" Russian Arctic indigenous people to manage the risks from contaminants towards their health and traditional food sources and through demonstrations within another IW FA project "Strategic Action Programme for protection of the environment in the Arctic zone in RF" on traditional nature management.



GEF Support by Replenishment Phases

GEF Support by Numbers

While in the first 3 replenishment phases (GEF-1 to GEF-3) GEF's support was relatively stable between $60 — $80 million, it has clearly picked up in GEF-4, where GEF-funding increased to $122 million, of which $93 million were directly invested in projects implemented within Russian Federation.

The GEF allocation for Russia for the Focal Areas of Biodiversity, Climate Change, and Land Degradation alone amounts to $119.5 million [1], so we will certainly see another stark increase in GEF support to Russia over the next 4 years.

Quite recently, Russia is preparing for GEF 5 funding a new multi-focal area programmatic approach Partnership on Sustainable Environmental Management in the Arctic ("Arctic Agenda 2020"). This programme would aim at transformation of the existing system and practices of environmental management in the region through a number of targeted projects providing national and global benefits. The programme is envisaged as a partnership between Russian government and the GEF implemented through UN agencies and multilateral banks.

1 GEF-5 STAR allocation, System of Transparent Allocation of Resources.

GEF WORK IN RUSSIA

ON RENEWABLE ENERGY, ENERGY EFFICIENCY AND BIODIVERSITY

GEF Renewable Energy Portfolio Overview

As developing countries expand their economies and reduce poverty, they face major climate change and energy challenges. The mere facts are cause for alarm:

- World energy consumption is projected to increase from 138 TWh in 2006 to 162 TWh in 2015 and 199 TWh in 2030—an increase of 44 percent. Non-OECD countries are expected to increase their consumption by 73 percent, compared with only a 15 percent increase for OECD countries for the same period (EIA 2009).
- Developing countries today emit about half of global CO_2 emissions. Under "business as usual" scenarios, their future emissions will increase faster than those of industrialized countries (den Elzen, M., and Hohne, N. 2008).
- Worldwide, more than three billion people depend on traditional solid fuels (wood, dung and agricultural residues) to meet their basic energy needs, contributing to levels of indoor air
- Pollution well above international standards (SEI 2009).
- Black carbon (soot) emissions from the burning of traditional biomass for household cooking are responsible for an estimated 18 per cent of global GHG emissions (SEI 2009).
- 1.6 billion people today, most of them living in Sub-Saharan Africa and South Asia, do not have access to electricity. Eighty percent of Sub-Saharan Africa's population relies on kerosene and batteries in their households and diesel generators for their businesses (World Bank 2008).
- Gross domestic product per capita and energy use per capita will remain lower in most of the developing countries than in industrialized countries over the next decades. Energy-related CO_2 emissions per capita will also remain significantly lower in most developing countries for the decades to come (World Bank 2008).
- In the face of growing energy demand, conventional energy sources are environmentally, economically, and socially unsustainable and their continued use will contribute greatly to an increase in CO_2 emissions (World Bank 2008).
- Energy use accounts for about 65 percent of the world's greenhouse gas emissions (OECD/IEA 2009).

Energy is at the heart of widespread social, economic, and climate problems. Energy must be at the heart of the solution. Without access to clean, reliable, and efficient energy services, the poor are deprived of the most basic opportunities for economic development and improved living standards.

Clearly, energy demand and supply patterns both must be altered. This is a major challenge that demands comprehensive and sustainable solutions. In this context, the importance of renewable energy (RE) is beyond dispute. Clean energy technologies are vital to alleviating poverty, expanding rural development, and maintaining environmental quality. The productive use of renewable energy in rural areas helps raise incomes and improve health, providing power to pump water for irrigation, to process crops and power cottage industries, to light homes, schools, and hospitals — all services of premier importance and immeasurable impact in the remote rural areas.

Renewable energy technologies can also play crucial roles in employment and economic growth. They are more labor-intensive than conventional technologies for the same energy output (Pachauri 2009) — but at the same time renewable energy technologies (RETs) employ both local and decentralized workers. For an investment in RETs of US$ 1 million over ten years:

- Wind energy generates 5.70 person-years of employment.
- Solar photovoltaics generate 5.65 person-years.

- The coal industry generates 3.96 person-years.

Most renewable energy resources are virtually untapped in the developing world. Their local and distributed nature means investments in transmission grids are largely unnecessary. This is a cost-saving advantage developed countries do not enjoy, as their centralized energy grids are less appropriate for distributed energy applications.

The main barrier to the widespread use of renewable energy is the high upfront cost, particularly for installing equipment, particularly given the limited economic resources of the people most in need of the technology—most often the rural poor. Strengthening capacity building, promoting enabling environments, developing policy frameworks, and improving demands for RETs can help mitigate steep transaction costs and underdeveloped markets to some degree. However, significantly decarbonizing power production will require considerably more investment in renewable energy, of which at least 75 percent should be directed to non-OECD countries (IEA 2009).

The GEF Strategy on Renewable Energy

The Global Environment Facility (GEF) addresses the issues related to climate change through two approaches: mitigation and adaptation. On mitigation the focus is on reducing Greenhouse Gas (GHG) emissions through energy efficiency, renewable energy, and solutions for sustainable transport. On adaptation the focus is on activities that minimize the adverse effects of climate change. Recognizing the importance of energy to economic development, the unfavorable effects of fossil fuels, and the sustainability of renewable energy sources, the GEF has made it a strategic objective to support projects that promote transfer of renewable energy technologies and work with regulatory institutions to reform policies and rules for this vital sector.

Financing renewable energy technologies and supporting removal of barriers to the adoption of renewable energy has been a key component of the GEF climate change strategy since the beginning of the GEF. The GEF renewable energy portfolio stands at over $1 billion, and GEF support has covered a wide range of renewable energy technologies, including off-grid and on-grid photovoltaics, solar water heating, wind turbines, geothermal, small hydro, methane from waste, and biomass applications for power and heat production.

Evolution of the GEF Renewable Energy Strategy

During the GEF's pilot phase (1991–94), the strategy was to demonstrate a viable range of technologies useful for stabilizing the concentrations of GHGs in the atmosphere. After restructuring, from GEF-1 (1994–98) to GEF-2 (1998–2002) and GEF-3 (2002–06), the GEF focused on renewable energy technologies that were mature, available on the market, and profitable, but were prevented from dissemination by informational, institutional, technological, policy, or financial barriers. Projects implemented under this strategy were termed "barrier removal" projects, as they sought to remove such barriers to promote faster adoption of new technologies and practices. Support has been provided to countries to open up electricity regulations to renewable energy generation, and especially in the field of biomass GEF support has focused largely on the utilization of biomass wastes and residues.

In 2004, this barrier-removal strategy was defined even further to focus on interventions in the following fields:

- **Policy frameworks:** Governments must play an essential role in setting policies favorable to the adoption of environmentally sound technologies (ESTs).
- **Technology:** The range of available technologies should be robust and operational — more mature technologies are easier to transfer.
- **Awareness and information:** National stakeholders, especially market participants, must be aware of the technology and have information on its costs, uses, and markets.
- **Business and delivery models:** Market-based approaches are preferred; businesses and institutions must be in place to deliver to and service those markets.
- **Availability of financing:** Financing must be available for technology dissemination, though it is insufficient in itself to ensure the market penetration of ESTs.

In addition, GEF-3 focused on reducing the long-term costs of low-GHG-emitting electricity generation technologies. The technologies considered were not yet commercially available and were very expensive relative to the baseline or conventional alternatives. In these cases, such as concentrated solar power (CSP), the technology and its costs were themselves the barrier to greater dissemination.

Within GEF-4 (2006–10), the GEF committed to two strategic programs on renewable energy: one that promotes market approaches for the supply of and demand for renewable electricity in grid-based systems, and one that promotes sustainable energy production from biomass. The development of a separate strategic program for biomass was considered necessary in order to highlight its importance and ensure consistency with other focal areas, given the emphasis placed upon sustainable forest management in the remainder of the GEF portfolio.

Current Renewable Energy Strategy in GEF-5

In GEF-5, GEF support under this objective will boost investment in renewable energy technologies, recognizing that renewable energy plays an

indispensable role not only in combating global climate change but also in addressing energy access, energy security, environmental pollution, and sustainable development. GEF will expand beyond the creation of enabling policy and regulatory environment to promoting investment in renewable energy technologies, including in the relatively small, poor developing countries and the least developed countries (LDCs), where both private and public capital is scarce and access to modern energy services is low. The GEF will endeavor to invest in renewable energy projects that will lead to a step-change in the deployment and diffusion of reliable, least-cost renewable energy technologies that address the natural resource endowments of participating countries.

Given the acute demand for energy access and modern energy services in rural areas in developing countries, GEF support will cover not only on-grid renewable energy programs but also decentralized production of electric power as well as heat using indigenous renewable sources such as biomass, solar, wind, hydro, and geothermal. GEF projects can promote local SMEs to enhance their technical capacities to provide installation, operation, and maintenance services for renewable energy technologies. Furthermore, GEF support will extend to recovering methane from biomass wastes for power generation or heat production. Finally, GEF support may also extend to supporting sustainable production of biomass for solid and liquid biofuels as a substitute to fossil fuels where appropriate conditions, including safeguard policies, exist.

In promoting biomass applications, sustainability criteria will have to be observed to ensure that GEF support to modernization of biomass use does not undermine food security, contribute to deforestation, reduce soil fertility, increase GHG emissions beyond project boundaries, or violate sustainability principles relating to biodiversity conservation or sustainable land and water management.

GEF intervention under this objective can be a combination of technical assistance for policy and regulatory support, building the technical and institutional capacity, and establishing financing mechanisms for investment in the deployment and diffusion of renewable energy technologies.

The GEF Investment in Renewable Energy

As an operating entity of the financial mechanism of the UNFCCC, since its inception in 1991, the Global Environment Facility (GEF) has invested $2.5 billion in overall financing climate change mitigation, adaption, and enabling activities, and has leveraged more than $15 billion additional investment. The GEF has become the largest public-sector funding source to support the transfer of environmentally sound technologies to developing countries. The renewable energy portfolio represents a substantial part of the GEF investments.

From 1991 to October 2010, the renewable energy portion of the GEF's climate change portfolio amounted to about US$ 1.2 billion, with an average of US$ 5.3 million per project. This GEF funding has been supplemented with US$ 7.5 billion in cofinancing.

Since its inception, the GEF has supported 208 renewable energy projects. Most of the renewable energy investments have taken place in Asia, Africa, and Latin America and the Caribbean (figure 1).

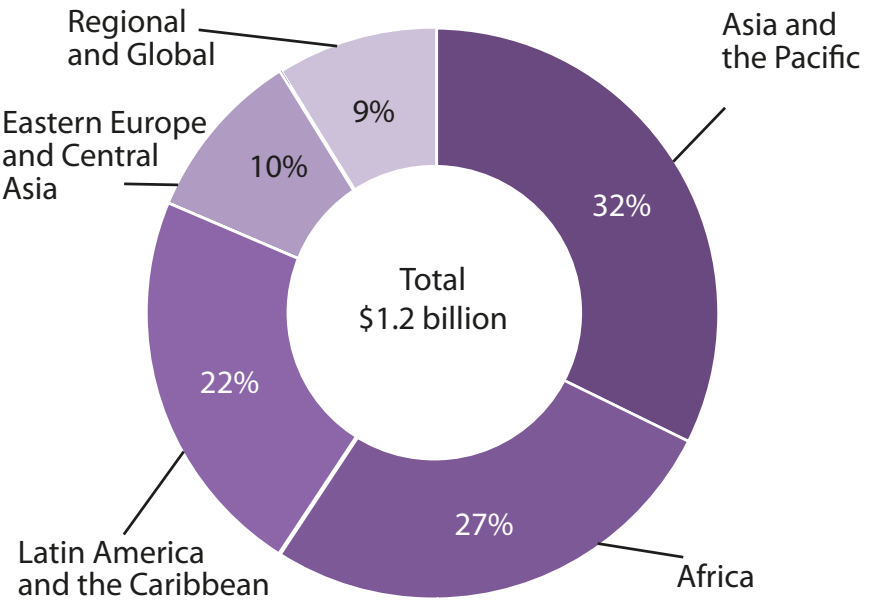


FIGURE 1: REGIONAL DISTRIBUTION OF THE GEF PROJECTS IN RENEWABLE ENERGY, BY FUNDING LEVEL
Source: GEF COP16 Report, October 2010

The majority of GEF funding is directed to projects that promote a range of RETs (figure 2) without indicating specific technologies. This is because the GEF's role is to catalyze and transform energy markets generally, not to pick single RETs within the market. That said, however, when local climatic and market conditions clearly favor investing in specific technologies, the

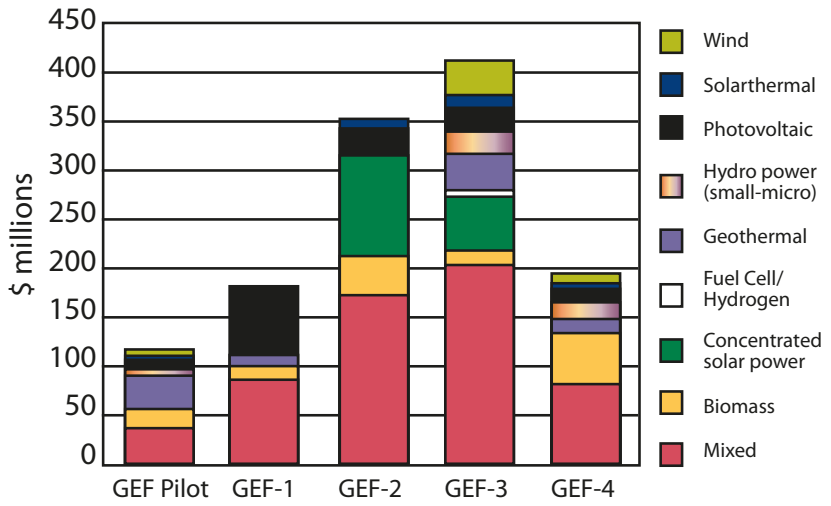


FIGURE 2: LEVEL OF GEF FINANCING IN RENEWABLE ENERGY FOR LEVEL OF TECHNOLOGY
Source: GEF COP16 Report, October 2010

GEF has responded effectively by allocating targeted funds.

INTERVENTIONS FOR ADVANCING RENEWABLE ENERGY TECHNOLOGIES

The GEF's catalytic approach to the promotion of renewable energy is multidimensional, mixing interventions that range from barrier removal and capacity building to direct financing of investments in RETs. The RE projects undertaken also involve many stakeholders — governments , private firms (manufacturers and dealers), financial intermediaries, recipients of technical assistance, technology suppliers and contractors, and project developers.

Building favorable market conditions

The GEF pursues the development of market conditions for increased renewable energy production and use through development of enabling policies and regulatory frameworks, standards and certification, information and awareness, and capacity building.

National policies are seen as critical in creating the conditions necessary for RE markets development. Most GEF projects have contributed directly to the development of such policies, for example, by drafting or revising national strategies, or by developing roadmaps and national action plans for RE development.

Another area where the GEF has been successful is in developing standards, testing, and certification of RETs. This is a vitally important contribution; effective standards and testing can significantly improve quality, reliability, and consumer acceptance. (Eberhard 2004)

Finance for investments

The availability of affordable finance remains a key barrier for RE investments, especially in developing countries. GEF projects focus on understanding the nature of financial barriers so that effective barrier removal efforts can be targeted — whether to financial intermediaries (banks, development finance institutions, and microlenders), suppliers, dealers, service companies, end-users or a combination of several or all.

Over the past 20 years, the GEF, through its agencies, has:

- **Provided grants and contingent financing for project preparation and investment.** The GEF offers contingent loans and grants to cover investment capital costs. In the same manner, the GEF sponsors the up-front costs for project development, which can constitute up to 5 percent or more of the total investment cost. A contingent loan has an interest rate and payment schedule similar to a traditional loan, but the loan can be forgiven if certain conditions are met.
- **Mitigated technology-specific project risks.** For example, the highest risk during geothermal plant development occurs when the first well is drilled, even if there has been successful surface-based geophysical exploration. GEF projects in Africa, the Caribbean, and Eastern Europe are developing risk mitigation facilities to insure investors against the geological and technical risks during development of such projects.
- **Initiated microfinance schemes**. Financing of private consumers as households and small enterprises for the purchase of renewable energy equipment is often considered a low priority by financial institutions (FIs), especially in the developing world. The GEF has supported existing FIs or developed new microfinance institutions to provide lending to such recipients, for example, for the purchase of solar home energy systems in Bangladesh and Uganda.

RENEWABLE ENERGY TECHNOLOGIES SUPPORTED BY THE GEF

Over the past 20 years, through direct investments alone, GEF projects have contributed to the installation of more than 3 GW electric and 2.8 GW thermal of renewable energy capacity. The GEF pilot phase started with the proven and viable technologies, and during GEF-1 the share of projects for each technology stayed the same, but the number of projects increased. A significant diversification of technologies occurred during GEF-2 and GEF-3, with most in wind, biomass, hydro, and photovoltaic (PV). During GEF-3, fewer than a dozen solar thermal heat

and geothermal projects led to a notable increase in installed RE capacity. Concurrently, the technologies portfolio was further diversified by opening up the strategy to less proven and more pre-commercial technologies.

Solar Energy

Solar energy systems can harness the sun's rays as a high-temperature, clean energy source for heat or electricity. Solar energy can be used directly to heat water, or for household heating systems by means of solar thermal collectors. Solar energy can be converted to electricity through PV systems, and can be concentrated to produce high-temperature heat to power thermodynamic cycles for producing electricity. The abundance of solar radiation in most developing countries makes solar energy technologies ideal for the developing world.

Solar Thermal Heating

The GEF has supported 14 national and multi-country solar thermal projects in 29 countries with financing of US$ 39.7 million. The projects were leveraged at a ratio of 1:3.7 in cofinancing and have led to the installation of an estimated nominal thermal power of 2.45 GW.

Solar Thermal Power

The most significant technology to have received GEF support is CSP technology. The GEF has supported three countries and a global project to harness the potential of solar thermal power. The projects were funded with US$ 149 million of GEF resources and leveraged US$ 890 million in cofinancing. They will lead to the installation of an electric capacity of 70 MW.

The GEF in partnership with the World Bank developed a portfolio of three CSP demonstration plants in Mexico, Morocco and Egypt. The projects built solar fields, typically of 30 MW, as part of hybrid gas-turbine plants. Successful hybridization of gas turbine and solar power plants enables such projects to dispatch power at will, making them more economically attractive. However, these projects have progressed very slowly, indicating that the technology did not meet with the enthusiastic uptake originally anticipated.

Off-Grid Photovoltaic

The GEF has funded over 70 projects in 68 countries that provide access to electricity through the use of solar home systems and off-grid photovoltaic electricity with US$ 361 million, cofinanced at a ratio of 1:7. The support has led to the installation of estimated nominal peak power of 124 MW.

GEF projects have led also to the rapid growth of the PV industry in several countries, improving the quality of production and reducing costs, thereby expanding the market for solar home systems and other off-grid PV applications.

On-Grid Photovoltaic

The GEF has supported the market transfer and installation of grid-connected PV systems in 21 projects. An estimated PV peak power of 40 MW has been installed, mostly in combination with small wind and hydro, and often to support mini-grids. The GEF funded these projects with US$ 160 million, co-financed with almost US$ 1.6 billion.

Wind Power

Current studies indicate that the earth's potential wind energy supply significantly exceeds global energy demand. Yet, despite 40 percent annual growth in wind generating capacity over the past 25 years, only 1 percent of global electricity demand is currently met by wind power. More than 98 percent of total current wind power capacity is installed in OECD countries, China, and India.

Wind power faces a large number of technical, economic, financial, institutional, market, and other barriers. To overcome these barriers, many countries have employed various policy instruments, including capital subsidies, tax incentives, and tradable energy certificates, feed-in tariffs, grid access guarantees, and mandatory standards.

The GEF has supported a variety of wind power projects in 38 countries. These have led to installation of almost 1GW of electric power. On 40 projects with a wind power component, the GEF has spent US$ 252 million, which has leveraged US$ 1.9 billion of cofinancing.

Experience has shown that resource availability and familiarity with the technology are key considerations for the wind market to take off. However, the most significant barriers to successful growth in the market are regulations that deter renewable generators' access to the grid and the incremental costs to distributors of turbine-generated electricity.

Worldwide experience shows several successful approaches to this problem, including the creation of a renewable portfolio standard and a guaranteed renewable "feed-in" tariff. The GEF has helped countries understand and adopt these regulations.

GEF FUNDED RENEWABLE ENERGY PROJECT IN THE RUSSIAN FEDERATION

The five-year GEF-IFC co-funded "Russia — Renewable Energy Program" (RREP) is the first GEF-IFC project on renewable energy in the Russian Federation and was initiated on 29th of November 2009.

The RREP aims, in close co-operation with the European Bank for Reconstruction and Development (EBRD) and the World Bank to facilitate a sustainable market for renewable energy in the Russian Federation by supporting the development of enabling policies, institutional capacity, market facilitation and financing.

The RREP project includes both advisory services as well as a financial component. The GEF investment amounts to over US $10 million and is supported by a strong cofinancing amounting to over US $142 million. The majority of the cofinancing consists of two hard loans from the IFC and the EBRD respectively. Its executing agency is the Russian Minis-

try of Economic Development and Trade.

The RREP project addresses renewable energy barriers in the Russian Federation such as the regulatory and legal framework for renewable energy and market based incentive mechanisms. The geographical focus is on selected regions in Russia which are identified based on their favorable preconditions for renewable energy projects implementation and opportunities for investment/demonstration projects (e.g. where there are existing projects in the pipeline, and where sufficient renewable energy resources such as wind, geothermal, biomass, small hydro exist, sufficient load/demand and infrastructure). Furthermore the RREP project activities aim to raise awareness among the major stakeholders and decision makers, which ultimately is expected to result in tangible investment in the renewable energy industry in Russia.

The key components of the program include:

Component 1: Regulatory and legal environment development addressing key legal and regulatory issues and in particular an incentive framework which would support investment in renewable energy. Subcomponents include: improving the information basis for policy development; support to multi-agency working group on renewable energy legislation; consultation, consensus building and awareness creation; and development of supporting policies and bylaws.

Component 2: Market capacity development will address market feasibility and removal of barriers related to the market infrastructure for various renewable energy technologies, and the applicability of those in Russia. To ensure that the actions are not overly diluted these activities will focus on 2 to 3 selected program regions. Sub-components include renewable energy resource assessments; contract and legal support to investors; and development of market infrastructure.

Component 3: Renewable energy financing, addressing availability of financial products needed by renewable energy developers and investors such as long term financing and the requirements to enable these products to be offered on the market to IPP's and other investors/developers. Sub-components include capacity building in the banking sector, and the establishment of a financing facility.

Through the three program components the market for renewable energy in Russia will be facilitated. Key program indicators, which will demonstrate success, are:

- Direct GHG emission reductions estimated at a cumulative 5 million tons of CO_2 eq over a 20 year investment lifetime, and estimated indirect GHG emissions reductions between 20 and 200 million tons,
- Introduction of an enabling regulatory and incentive framework for renewable based power, including:
  - regulation that institutionalizes needed incentive mechanisms to allow renewable energy to compete with, often subsidized, traditional generation sources; including the analysis and promotion of various options such as tax incentives, subsidies or feed-in-tariffs, accelerated depreciation;
  - transparent, predictable, and efficient processes and approvals related to land leasing, permitting, licensing, interconnection processes, etc., to ensure that private sector development/investment (e.g., by Independent Power Producers — IPP's) is sufficiently supported;
  - renewable energy-specific regulations related to the above issues that are required at the regional (okrug), provincial (oblast), and — potentially — local level of government, and that require support in development and propagation.
- Thirty (30) renewable energy projects reaching financial closure;
- Investment of total value of US$ 366 million facilitated into renewable energy projects from IFC and EBRD financial instruments as well as project sponsors);
- New renewable power generation capacity of 205 MWe installed ;
- 770 Gown of electricity generated annually, by year 2015, from new renewable energy installations.

The GEF and Energy Efficiency

Today the GEF is one of the public sector's largest funders for energy efficiency in the world, with direct investments of US $850 million in more than 90 developing and transition countries and an additional US $5.9 billion in cofinancing. These investments are expected to reduce carbon dioxide (CO_2) emissions by 1.3 billion tons by 2020.

The GEF has invested a substantial share of its resources in projects that remove market and other barriers to energy efficiency. Through its support, developing countries have introduced a combination of policies and regulatory frameworks, standards and labels for appliances, lighting, buildings, and industrial equipment. They have established market-based approaches and financial instruments. Finally, the GEF has fostered technology transfer through the demonstration of energy-efficient technologies that directly affect current and future generations.

The GEF remains committed to improving energy efficiency as a pivotal way to meet the climate change challenge. We look forward to fur-

ther partnerships with the public and private sectors to remain a premier source of funding for global environmental projects.

ENERGY EFFICIENCY IN THE RUSSIAN FEDERATION

The GEF worked with UNDP in 1996 and 2002 to lay the foundation for energy efficiency work in Russia with two projects: Capacity Building to Reduce Key Barriers to Energy Efficiency in Russian Residential Buildings and Heat Supply; and Cost Effective Energy Efficiency Measures in the Russian Educational Sector.

Building on that work, in 2008, UNIDO worked with UNDP and EBRD to create a new umbrella program for energy efficiency in Russia. The programmatic framework document was approved by the GEF Council in April 2008 and includes six full-size projects focusing in critical areas for energy efficiency. The projects supported the major priorities of the 2003 Energy Strategy of the Russian Federation for the period up to 2010. This strategy included:

- The reduction of specific costs for generation and use of energy resources be means of rational use, application of energy saving technologies and equipment, losses reduction;
- The improvement of financial sustainability and efficiency of the use of energy sector potential, increase of the labor productivity.
- Maximally efficient use of natural fuel-energy resources and energy sector potential for economic growth and improvement of the quality of living of citizens.

The projects are shown in the Table below. Each of these projects has focused on critical areas for energy efficiency improvement that can lead to substantial reductions in greenhouse gas emissions.

Special Highlight — UNIDO/EBRD Market Transformation Programme on Energy Efficiency in GHG-Intensive Industries in Russia[1]

Under the programmatic framework, UNIDO developed a strong partnership with EBRD to focus on energy efficiency solutions for energy and GHG intensive industries across the Russian Federation. The typical energy efficiency of Russian industry is significantly below the global average. There are a number of reasons for this disadvantage: an ageing capital equipment stock, traditionally low energy prices and abundant national energy resources, in combination with low government and management interest.

This situation is changing rapidly. Government has set an ambitious target of a 40% improvement of the energy intensity until 2020. National gas prices are increasing steadily, to the level of export prices and electricity sector reforms created a liberalized electricity market leading to market-based prices for electricity. This development raises the interest for energy efficiency significantly. In fact many options could be implemented that are cost-effective today. However the uptake rate for these efficiency options is slow. There are still serious barriers that stand in the way of financing and implementing energy efficiency options. The knowledge in enterprises about the real energy efficiency opportunities needs improvement as well as the capacity in government to develop and implement effective energy efficiency policies.

Energy Management Systems (EMS) have proven to be an effective

[1] "Market Transformation Programme on Energy Efficiency in GHG-intensive Industries in Russia. Project Preparation Support for the Development of Industrial Energy Efficiency Markets in Russia, Final Report, ICF International, 20 April 2010."

Table: Energy Efficiency in the Russian Federation Programmatic Framework

Implementing Agency	Project	GEF Financing	Co-Financing	Project Endorsement Date
UNDP	Standards and Labels for Promoting Energy Efficiency	7,810,000	32,250,000	April 5, 2010
EBRD/UNIDO	Market Transformation Programme on Energy Efficiency in GHG-Intensive Industries in Russia	15,385,000	135,750,000	July 22, 2010
EBRD	Improving Efficiency in Public Buildings in the Russian Federation — under the Energy Efficiency Umbrella Program	9,210,000	62,900,000	November 3, 2010
EBRD	Improving Urban Housing Efficiency in the Russian Federation	9,670,000	86,700,000	November 19, 2010
UNDP	Transforming the Market for Efficient Lighting	7,020,000	20,500,000	March 16, 2010
UNDP	Building Energy Efficiency in the North West of Russia	5,840,000	23,250,000	October 8, 2010

tool for enterprises in other countries. Typically they raise the annual efficiency improvement by 1-2 percentage points over a period of many years. This represents an increase by a factor two to three compared to the structural effect (replacing obsolete equipment by new more efficient ones). Such improvements have been observed for large companies and small and medium sized enterprises (SMEs). However experience shows that the EMS requirements for SMEs cannot be as demanding and detailed as for large enterprises. Both groups of enterprises need a differentiated approach.

Two types of efficiency options exist. The first group consists of replacement of existing equipment with more efficient equipment. The second group is more complex. It consists of options where entire systems are optimized. This requires a good understanding of the functioning and functionality of combinations of pieces of equipment. The level of understanding that is needed for systems optimization is much more demanding, but in many cases it will show much greater efficiency potentials. For example, the efficiency potential for a motor may be five percentage points, while the potential for a motor system may be twenty to fifty percent. Typically more than half of the total industrial energy use can be optimized using a systems approach. Therefore systems approaches can help to raise efficiency potentials substantially on a national and global scale. In many cases potentials in Russia are expected to be greater than elsewhere because many plants operate with outdated equipment and processes.

Attention for systems approaches is growing in Russia. There have been some efforts in optimization of water supply systems that show efficiencies for existing pumping systems of less than ten percent, revealing potentials to double or triple efficiencies. The key issue for deployment is to broaden the understanding and deployment of this type of systems approach. This requires capacity building for industry in EMS and Systems Optimisation.

The Government has passed an ambitious new energy efficiency law, which poses a considerable burden on the policy making capacity in particular of the Ministry of Energy. It is reorganizing its structure to raise the effectiveness of implementation of the law. For example, it is transforming one of its associated bodies that had some research tasks into a new Russian Energy Agency with a much broader set of responsibilities. Clearly a new range of skills and experts will be needed to further develop, implement and monitor policy measures. This new agency as well as other government bodies needs capacity building in order to adequately meet the demands set by the new energy efficiency law.

Therefore, the project focuses on a number of large energy-intensive industries and Small and Medium Enterprises. Ten large enterprises receive intensive training and support as well as fifty SMEs. At the end of the project, they will have implemented a full scale EMS. They will serve as lighthouse projects, showing the cost effectiveness and competitive advantages of such a company effort. A few hundred more companies will have been exposed to EMS, possibly resulting in significant uptake. The understanding of the energy efficiency situation in different industry sectors in Russia will have improved markedly. These developments can be the basis for the introduction of a national energy management standard and future voluntary agreements. One thousand national experts, facility staff and government officials will have received training. This core of experts can serve as a basis for Russian implementation of modern energy efficiency policies on a national scale.

Combining the energy efficiency capacity building efforts with concrete financing opportunities for energy efficiency investments will considerably increase the impact of the proposed GEF-programme. The associated synergy of this combination is realized by complementing the GEF proposal by significant EBRD financing tools, the RUSEFF and Sustainable Development financing lines as well as carbon finance and specialized loan or equity facilities. The additional capacity and software and hardware investments that result from this project will result in a more effective, more cost-efficient and accelerated use of these financing lines. It is expected that in five years, the project will have resulted in an additional CO_2 reduction based on 10-year equipment life-times, in the order of 3.8 Mt . Thus the project combines the financing expertise and network of contacts in Russia that EBRD has developed during the last two decades with the UNIDO international technology transfer and capacity development programme for energy management and systems optimization.

EXAMPLE OF ENERGY EFFICIENT PROJECT: CATALYZING INVESTMENT IN INDUSTRIAL ENERGY EFFICIENT BOILERS IN CHINA, VIETNAM AND RUSSIA

By Ming Yang, Senior Environmental Economist, GEF

Introduction

The Global Environment Facility (GEF), a multilateral financial mechanism established in 1991, provides grants to developing countries for various projects and programs that protect the global environment. The objective of this article is to illustrate the GEF's role in catalyzing industrial energy efficient boilers. This article briefly reviews a GEF project that catalyzes investments industrial energy efficient boilers in China. It also shows opportunities of GEF's continued role in catalyzing investment in industrial efficient boilers in two other countries: Vietnam and Russia. For more

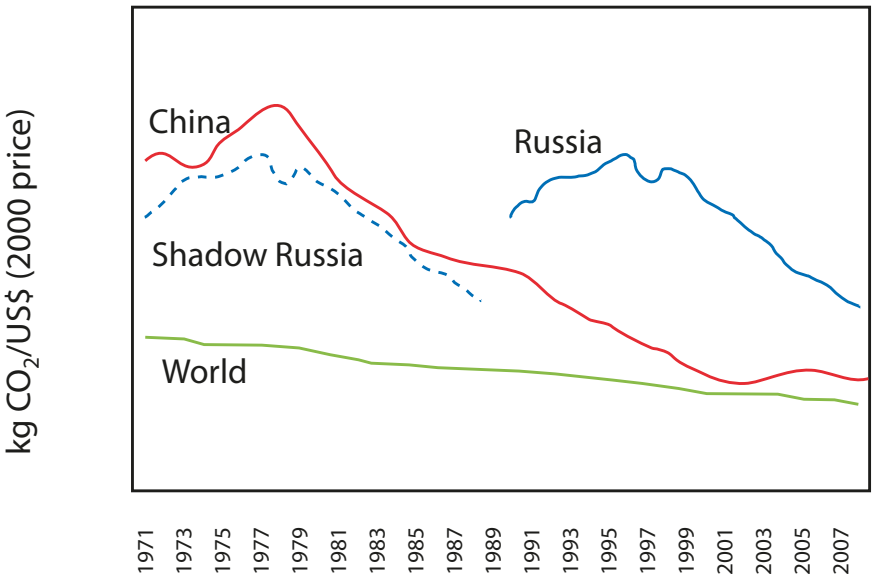


Figure 3: Carbon intensities of China and Russia

about the GEF's investments in energy efficiency, see GEF (2009).

China is one of the selected countries for this article because about 20 years ago, the GEF, the World Bank, and the Chinese government successfully developed and implemented a project to improve energy efficiency in industrial boilers in the country. That project greatly improved energy efficiency in Chinese industrial boilers. Therefore, it is a good example to share with GEF project developers and Agencies.

Vietnam is selected in the second case. Following the Chinese open door policy and economic reforms, Vietnam attracted foreign capital investment in the industrial sector. Over the past few years, a large number of manufacturing industries have been relocated from China, South Korea, and Taiwan to Vietnam. The industrial technology transmission and relocation from foreign countries to Vietnam today is much similar to that from foreign countries to China about 20 years ago. This implies a great opportunity in energy efficiency in Vietnam today as in China two decades ago.

Russia is also selected in this study due to the similarities in its energy inefficiency status and carbon intensity situation today to that in China two decades ago. Figure 3 presents carbon intensities in China (red curve), Russia (solid blue curve), and the world (green curve). If the solid blue curve is shifted left by 20 years and becomes the dotted blue curve that is marked "Shadow Russia", the curve would have almost the same pattern as that of the red curve. Evidently, Russia's carbon intensity change from 1990-2008 followed the pattern of the carbon intensity change in China from 1971-1990. This also implies great energy efficiency opportunities in Russia today as in China two decades ago.

China: GEF Successful Story in Investing Industrial Boilers

In the early 1990s, CO_2 emissions from energy consumption accounted for about 80 percent of China's total GHG emissions. The largest single source of emissions was coal combustion in medium and small industrial boilers (IBs), excluding power industrial boilers. Medium and small-scale industrial boilers, which were defined as boilers producing less than 65 tons of steam per hour per unit (ton/hr/unit), consumed over 350 million tons of coal and emitted 715 million tons of CO_2 in China in 1990. This amount of primary energy accounted about 35 percent of the country's total coal use, and the carbon emissions were equal to 30 percent of total emissions from energy consumption in China.

There were an estimated half million units of industrial boilers in use outside power industry in China in the early 1990s. Over half of all IBs were between 1 and 4 ton/hr/unit, and the average size was only 2.3 ton/hr/unit. In contrast to other major industrialized countries, where coal- fired boilers outside of the power sector had been largely phased out, over 95 percent of industrial boilers in China burn coal. Given the cost advantages of coal relative to oil, and the lack of large-scale supplies of gas in China, the use of large amounts of coal by small boilers was expected to continue well into the 21st century.

During the last quarter of the 20th century, Chinese industrial boiler design and production methods were based on pre-1950 design principles. Typical efficiency levels for Chinese IBs were in a range of 60-65 percent. In contrast, boilers of similar scale and application in developed countries rarely operate below 80 percent net efficiency. If the thermal efficiency of the IBs in China could be raised to those of similar levels in the developed countries, coal consumption by small boilers could be reduced by 60 million tons per year — a savings of about 17 percent. In order to harness this 17 percent of energy efficiency saving potential in the Chinese industrial boilers, the GEF financed a project together with the World Bank and the Chinese government in the 1990s.

The objective of the GEF project was to reduce GHG emissions, as well as emissions of total suspended particulates (TSP), sulfur dioxide (SO_2) and nitrogen oxides (NO_x), through: (a) the development of affordable energy-efficient and cleaner IB designs; (b) the mass production and marketing of the improved boiler models that had successfully met performance criteria; and (c) the broad dissemination

of more energy-efficient and cleaner IB technologies throughout China via institutional strengthening, improved information exchange, and energy efficiency and environmental policy reform.

Design of the GEF project

The project consisted of the following components with total project cost and GEF financing:

- Upgrading of existing Chinese boiler models, total costs of $53.1 million with GEF contribution of $16.5 million
- Adoption of new high efficiency boiler models, total costs of $44.1 million with GEF contribution of $13.7 million
- Technical assistance (TA) and training for boiler producers and consumers, total costs of $2.1 million with GEF contribution of $1.3 million:
- Monitoring and evaluation (M&E), and project management, total costs of $2.1 million with GEF contribution of $1.3 million.

The GEF financed the incremental costs of the project, calculated as the difference between the costs of the "GEF alternative" and the costs of the "baseline". The latter was defined as the costs that would otherwise be incurred by China to meet the same level of industrial boiler demand. Incremental costs faced by boiler producers to acquire advanced boiler technologies from abroad included licensing, procurement of engineering services, selected purchase of embodied technology, and their commercial demonstration. Incremental costs also included the modification of production facilities to produce new more energy-efficient boilers. The net incremental cost for boiler producers for undertaking the GEF alternative was approximately $30.2 million. Additional costs of $2.6 million were needed to ensure sustainability and effective implementation of the project, including monitoring and evaluation, and project management. As such, the GEF totally financed $32.8 million in this project and leveraged $68.6 million from the World Bank and the Chinese government.

Global Environment Benefits

The World Bank (1996) projected that more efficient industrial boilers developed under the project were estimated to account for roughly 50-60 percent of total IB output in China by the end of 2016. Direct coal savings of IB boilers produced were about 102 million tons (Mt) of coal, resulting in the reduction of about 181 million tons of CO_2.

The World Bank audited the implementation of the project in December 2004 and the GEF Evaluation Office reported project terminal evaluation in March 2005. Their auditing and evaluation reports showed the following results (World Bank 2004, GEFEO, 2005):

The project will reduce direct CO_2 emissions by a cumulative amount of 160 million tons by 2019, compared to 181 million tons in 2016 that was estimated at appraisal of the project development. As such, the net costs of direct CO_2 mitigations for the GEF investment in the project was $0.205 per ton of CO_2 (indirect CO_2 reductions were not accounted). This $0.205 per ton of CO_2 was substantially below Euros 14 per ton that was used in the EU carbon market in emissions trading for CO_2 in December 2010. Given the uncertainties inherent in such estimates and the rapid rate of change in China's energy market, the GEF evaluation considered that the project objective was essentially achieved.

Vietnam: low hanging fruits in industrial boilers

By the end of 2010, the number of medium and small IBs in Vietnam was estimated at about 4,000 units. About two thirds of these boilers belonged to the government-owned companies and were registered with the Ministry of Industry of Vietnam. Of all these boilers, more than 90 percent had a capacity of less than 5 tons/hr/unit. Recent on-site surveys indicated that the actual energy efficiency industrial boilers were between 33-70 percent for coal fired boilers and 50-85 percent for oil-fired ones. Of all the surveyed boilers, 45 percent were located in the North region, mainly using coal as fuel, and 31 percent were located in the South region, mainly consuming fuel-oil. Moreover, approximately 39 percent of oil-fired boilers and 47 percent of coal-fired boilers were manufactured or built before 1985. Most of the boilers were made in China, and the rest were made in Japan, Vietnam, Russia and the United States. Evidently, there is a huge potential of energy conservation in industrial boilers in Vietnam.

Design of an Industrial Boiler Project

During 2007-2008, the author undertook energy efficiency auditing for two manufacturing factories on-site in Vietnam. One of the most important tasks was to design a project for energy efficient boilers. The data and information presented below were collected and generated on the basis of the auditing and designing of the project in one of the two factories.

In total, there were nine small industrial boilers in the audited factory. The nine boilers were installed three boiler rooms and used in three different boiler steam systems in the factory. The first room held 4 boilers with a total capacity of 28 tons of steam production per hour (2 units × 4 tons/unit/hr + 2 units × 10 tons/unit/hr). The total capacity of steam production of the second room was 12 tons/hr (3 units × 4 tons/unit/hr). The rest two boilers in the third room were diesel-fired and had a total capacity of 28 MW. The purpose of the boilers in the first two rooms was to provide steam for production processes and the third room boilers supplied hot water in the bath/shower rooms of the factory. Each of

the three boiler rooms had its own steam/heat supply system. In 2007, these boilers consumed 5,360 tons of heavy fuel oil and 192 tons of diesel.

There was a great energy saving potential in the three boiler steam systems. A typical boiler steam system consists of boilers, steam pipelines, steam molds (steam load of industrial process), steam valve, condensed water pipes, seam recovery tanks, and pumps to feed condensed water into the boilers. The more compact and closed the systems, the more efficient the systems. On-site inspection discovered that the two boiler-steam systems in the factory were open and not compact. A large amount of steam/hot water (energy) was wasted in the two steam systems.

In the first steam system, the steam at the outlet of the boiler (190 °C) was directed to a workshop about 100 meters away from the boilers. Before the steam was used by the industrial process (the molds), the steam temperature was about 150 °C. After being used in the industrial process, the steam and hot water (about 130 °C) was separated by a steam separation valve. The condensed hot water (about 98 °C) was then pumped to a water processing tank in the boiler room. When the condensed hot water in the tank cooled down to 90 °C, it was pumped to the boiler. Feeding in the water at 90 °C or below was a technical requirement in the boiler design. A large amount of energy was wasted around the hot water tank while the hot water temperature was cooling down. In addition, only 64 percent (18 tons/hr) of the exhausted hot water from the steam valves was pumped into the water processing tanks for recycle, other hot water was leaked in the system. The boilers were fed with 36 percent (10 tons/hr) of fresh water at an average temperature of about (30 °C).

More energy was wasted in the second steam system. The whole system was open and there was neither any recycling nor re-use of hot water in the system. In other words, the boiler was fed in with 100 percent (12 tons/hr) fresh water at a degree of 30 °C every time. As a result, a large amount of energy was consumed to raise feed-in water. Table 1 shows these figures.

The third stem system was simple. Two diesel boilers were heating water to supply hot water for bath/shower rooms of the factory. The author did not think it was necessary to use the boilers to heat bath water. The required temperature for the hot water for bath/shower was about 50 °C. The hot water can be generated by using waste heat from the exhausted steam of the industrial process.

There were two major areas in the above systems for energy efficiency improvement. First, the steam system and water cycle systems should be closed to prevent the loss of steam and hot water emitted to the drainage. Second, the condensed hot water of 98 °C should pass a heat exchanger to heat water for hot water supply of the bath/shower rooms before it is recycled into the boiler. To do so, two heat exchangers (one at the bath/shower room and the other at the flue gas of the boilers) should be installed. The steam and hot water from the first steam system was redesigned in the following pass: boiler outlet (190 °C steam, 1 M Pa) >> industrial process at the workshop (155 °C steam, 0.7 M Pa) >> steam valves at the end of industrial process outlet (98 °C hot water) >> pumping the hot water to bath/shower rooms (98 °C hot water) >> inlet of an exchanger of shower rooms (90 °C hot water) >> outlet of the exchanger of the shower rooms (60 °C hot water) >> returning pipes of exhausted boiler water (50 °C) >> filter (50 °C) >> feeding into flue-gas heat exchanger (50 °C) >> feeding the water from flue-gas exchanger into the boilers with a pump (70 °C). This new boiler system has two features. First, it stopped steam/hot water leakages in the system. Second, it used waste heat in the flue gas of the boilers to heat hot water for the bath/shower rooms. With this new system, energy saving potential in the boiler systems was over 50 percent.

	Steam System 1		Steam System 2	
	(ton/hr)	(%)	(ton/hr)	(%)
Total steam outlet	28	100%	12	100%
Recycled hot water	18	64%	0	0%
Feeding in fresh water	10	36%	12	100%
Hot water reuse at residential area	2.8	10%	0	0%
Wasted hot water	7.2	26%	12	100%

Table 1: Steam and hot water balance in the two steam systems

Global Benefit of the Project

If the life time of the project lasts 20 years, total fuel oil and diesel savings from this project will reach 53,600 tons and 3,840 tons respectively. This amount of fuel savings would result in a total mitigation of about 206,780 tons of CO_2. Since the total investment costs were at $434,800, the cost of CO_2 mitigations for the investment in the project was about $2.1 per ton of CO_2.

Russia: Energy Efficiency Potenitals in Industrial Boilers

Russia has enormous energy efficiency potential. During the initial stage of transition process (1990-1995), poor energy productivity of Russian economy deteriorated even further. During 2000-2010, due to economic development recovery, energy intensity in Russia in terms of energy consumption with respect to GDP declined by about 20 percent. However,

despite this significant energy intensity reduction, Russia is still the least energy efficient economy in the world.

The Russian government has been working hard on energy efficiency improvement. The G8 summit chaired by Russia in St. Petersburg in 2006 also raised the profile of the energy efficiency issues in the country. However, very few energy efficiency projects/programs took off over the past five years. This resistance may be explained by Russia's richness in primary energy reserves, and may have made Russia's carbon intensity today similar to China's carbon intensity over 20 years ago.

According to Bashmakov (2009), Russian technical energy efficiency potential exceeds 45 percent of 2005 primary energy consumption or 294 million tons of oil equivalent (mtoe). This is about the annual primary energy consumption in France, or the UK, or Ukraine, or half of that in Japan, and over two percent of the global primary energy consumption. Related CO_2 emission reduction potential is 50 percent of the Russian 2005 emissions.

Energy efficiency potential in industrial boilers heat generation was estimated at 10.4 mtoe or 8.4 percent of the 2005 consumption. Depending on the application of Kyoto flexible mechanisms, about 90 percent of the technical potential is economically viable and 30–87 percent is attractive for market agents. Statistically, the average efficiency of industrial boilers in Russia was 68.6 percent (Bashmakov, 2009).

According to a recent study by the World Bank (2008), gas-fired industrial boilers show the largest potential for improvement within the Russian industrial boiler family. Russia's boilers consumed 123.2 mtoe in 2005, of which industrial boilers consumed 66 percent. Installing gas-fired industrial boilers with the best international technology, through economically and financially viable investments, can bring 5.1 mtoe in natural gas savings.

In conclusion, Russia's current situation, much similar to China over 20 years ago and like Vietnam today, has energy efficiency fruits hanging low waiting to be picked up by the right investors.

Conclusions and Outlook

The GEF successfully catalyzed investment in industrial energy efficiency boilers in China in 1990s. With $32.8 million, the GEF leveraged $68.6 million funds from the World Bank and the Chinese government. The project will mitigate 160 million tons of CO_2. This generated lowest unit cost of carbon reduction in the world: about $0.2 per ton of CO_2 mitigation.

On-site energy efficiency auditing for a selected manufacturing factory in Vietnam discovered that investing in industrial boiler steam system in Vietnam today can generate similar results to that in China 20 years ago. Investing $434,800 in the factory's boiler system will mitigate 206,780 tons of CO_2 or at a cost of $2.1 ton of CO_2.

Russia's energy inefficiency current status is similar to that in China in the 1990s. Industrial boilers in Russia have about 17% of saving margin compared to the international accepted practice in industrial boiler efficiency. The GEF is ready to catalyze investments in industrial boilers in Russia in order to pick up the lowest-hanging energy efficiency fruits.

In GEF 5, investing in industrial energy efficiency is within the major project development areas of the GEF Climate Change and Chemicals team. The following areas are listed in the GEF's Climate Change Program Strategy during 2010-2014 (GEF 2010):

1. Demonstration, deployment, and transfer of innovative low-carbon technologies
2. Market transformation for energy efficiency in industry and the building sector
3. Investment in renewable energy technologies
4. Energy efficient, low-carbon transport and urban systems
5. Conservation and enhancement of carbon stocks through sustainable management of land use and forestry
6. Enabling activities and capacity building

GEF resources for catalyzing energy efficiency boilers are still available today for Vietnam and Russia. During 2010-2014, the GEF allocated $13.89 million and $ 87.01 million to Vietnam and Russia under the focal area of Climate Change (GEF, 2011). Project developers are welcome to contact the GEF Secretariat and UNIDO for grant application and project development.

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GEF Supports Russian Arctic

The Arctic is one of the few of the world's last remaining wilderness areas, but its ongoing rapid and accelerating change is stressing fragile polar ecosystems and affecting severely the well-being of its residents. A range of environmental problems in the region often have local and global causes and impacts including transboundary pollution, unsustainable marine fishing and biodiversity use, landscape fragmentation and ecosystem degradation.

Arctic countries showed rising interest in broader exploitation of Arctic natural resources but little attention was paid to environmental considerations or sustainable management of natural resources in the Arctic. The recently witnessed Climate Change impacts (rising sea temperatures, shrinking sea ice cover) actually open new horizons towards the expansion of natural resource extraction in the Arctic, including fisheries, oil and gas, minerals and consequent growing needs for infrastructure to support the natural resource exploitation. Some concerns need to be addressed in cooperation with other Arctic nations; others would require further support to indigenous peoples in the North.

Increasing global demands for natural resources, particularly hydrocarbons (Arctic resources account for about 22% of the undiscovered, technically recoverable resources of the world: about 13% of undiscovered oil, 30% of undiscovered natural gas and 20% of the undiscovered natural gas liquids, according to an USGS 2008 study), threatens Arctic ecosystems dramatically.

The territory of the Arctic Zone of the Russian Federation extends over more than 6 million km2 in total including more than 3 million km2 of marine waters. The land area of the

Russian Arctic represents about 18% of the entire territory of Russia or 44% of the circumpolar arc. While region's population represents less than 1% of the country's total population, about 140,000 members of the sixteen indigenous small nations of the North live in the Arctic area. The Arctic makes an important contribution to the Earth's climate stability, the global carbon balance, and the preservation of the ethnic and cultural diversity of, and traditional natural resource use by, the northern peoples.

Protected areas in the Russian Arctic represent only 5% of the territory with only a few existing marine protected areas, well below numbers in other Arctic countries. Industrial production in the region relies on extractive industries and metal manufacturing using primarily outdated technologies and practices. Sustainable economic development is impeded by weak and carbon-intensive energy infrastructure including energy generation, manufacturing and transport sectors and lack of adoption of environmentally sustainable technologies.

The GEF already helped the Russian Federation to test and apply integrated environmental management in three pilot areas through the project "An Integrated Ecosystem Management Approach to Conserve Biodiversity and Minimise Habitat Fragmentation in Three Selected Model Areas in the Russian Arctic (ECORA)". In support of these strategies and action plans, the project conducted number of activities including biodiversity and socio-economic inventories and assessments; targeted training programs; legislative, administrative and institutional capacity building; specific conservation measures; and pilot activities to test integrated ecosystem management approaches for conserving and sustainably using natural resources. The project included approved integrated ecosystem management strategies and action plans in three selected model areas in the Russian Arctic and supported the integrity of some of the world's last remaining pristine areas and supported livelihoods of indigenous and local peoples.

The GEF also supported Russian Arctic indigenous people to manage the risks from contaminants towards their health and traditional food sources and through demonstration project of the implemented "Strategic Action Programme for protection of the environment in the Arctic zone in RF" on traditional nature management.

Quite recently, Russia, in consultation with GEF Secretariat and GEF agencies, is preparing for GEF 5 funding a new multi-focal area programmatic approach Partnership on Sustainable Environmental Management in the Arctic ("Arctic Agenda 2020"). This programme would aim at transformation of the existing system and practices of environmental management in the region through a number of targeted projects providing national and global benefits. This new programmatic approach looks for transformation of the existing system and practices of environmental management in the region through a number of targeted projects providing national and global benefits. The programme is envisaged as a partnership between Russian government and the GEF implemented through UN agencies and multilateral banks. It is developed as a cross-focal area initiative and proposes interventions dealing with the reduction of GHG emissions and black carbon through the adoption of clean production and renewable energy technologies, reduction and control of transboundary pollution, biodiversity conservation and mainstreaming into development, and climate adaptation measures in most vulnerable sectors of the Russian Arctic economy.

The proposed programme is based on partnerships with international (Arctic Council and its working groups, NEFCO), federal (several line ministries), regional (several Okrug administrations), and municipal (Murmansk, Arkhangelsk, Naryan-Mar, Yakutsk, Anadyr) authorities established during implementation of the NPA-Arctic project. The innovative feature of the programme is its reliance on the public-private partnerships with the largest Russian industrial and energy companies such as Gazprom, Rosneft, Lukoil, Norilsk Nikel as well as Russian financial institutions (Vnesheconombank, Sberbank, others) in protecting the Arctic environment. Outputs and experiences of the programme would have longer-term consequences for environmental protection in the country beyond the Arctic region. Without GEF support and facilitating role, present opportunities and experiences gained in implementation of past projects can be lost or remain fragmented.

The GEF Small Grants Programme to Start in Russia During its Fifth Operational Phase

Launched in 1992, the GEF Small Grants Programme supports activities of non-governmental and community-based organizations in developing countries towards climate change abatement, conservation of biodiversity, protection of international waters, reduction of the impact of persistent organic pollutants and prevention of land degradation while generating sustainable livelihoods.

Funded by the Global Environment Facility (GEF), SGP is implemented by the United Nations Development Programme (UNDP) on behalf of the GEF partnership, and is executed by the United Nations Office for Project Services (UNOPS).

To date, SGP has presence in 122 countries and has supported more than 13,000 community-based projects worldwide in all GEF focal areas. The maximum grant amount per project is US $50,000; however the average is US $25,000. Grants are channeled directly to CBOs and NGOs.

During this Fifth Operational Phase, SGP will start the programme in Russia, opening up opportunities to local communities for their environmental projects. An example of the impact that the programme could have for Russia can be appreciated in the following examples of projects that have been successfully implemented in Romania.

Dumbravioara — the Village of Storks

Dumbravioara village (near Targu Mures) hosts 14 white stork nests that have been turned into a new source of income for the local population by the Milvus Group Association as implementer of an SGP project. The first stork museum in Romania was created which includes a small wooden scale-model of the village with the location of the nests throughout the community. A web surveillance camera that was mounted at one of the nests (photo) allows visitors to watch the “storks at home” in real time on a computer at the stork museum. Once internet was available, this later became accessible to the public at large. A stork festival became traditional as established through the project in 2005. An innovative solution to isolate medium-voltage power poles hosting white stork nests was developed for the first time in Romania by Milvus with the electricity company that implemented it in Dumbravioara at their own cost.

Milvus is currently expanding its area of intervention by implementing another GEF SGP project to develop a management plan for the Lernut and Cipau fishponds protected area and to monitor the effective implementation of the biodiversity conservation actions, as well as mitigate the conflicts generated by the inappropriate land use techniques in the protected area.

Saving Black Sea Dolphins

Positioned at the top of the food chain in the Black Sea ecosystem, dolphins have been particularly vulnerable to a wide range of threats resulting from the human activities carried out at sea. Mare Nostrum made a significant contribution to reducing the by-catch of dolphins by distributing acoustic deterrent devices to fishing companies to be

used at the fishing nets, and by working with the fishermen communities to prevent accidental catches.

Bat Protection in East Carpathians and Apuseni Mountains

The Romanian Association for Bats Protection (APLR) implemented a project designed to enhance the protection of underground habitats in five key limestone caves in Eastern Carpathians and Apuseni Mountains. The project inventoried the caves, described them as sites of community importance (Natura 2000) and involved local volunteers in bat protection activities and educational camps, increasing public participation in bat conservation actions. To fight superstition and fear of bats, the young generation from the communities living near the caves was involved in training camps and in the organization of the European Bat Night which since then became a tradition.

APLR is currently implementing a new project concerned in bat conservation in anthropic habitats by reducing human impacts to determine the impact of public lighting on foraging activity of bats, to measure the existing relationships between human land usage and various types of habitats used by bats, and to raise public awareness concerning biodiversity conservation, energy efficiency and sustainable land management.

FURTHER EXAMPLES OF GEF WORK IN THE REGION

Conserving Saiga Antelope in the Kazakhstan Steppe

Partners:

Committee of Forestry and Hunting of the Ministry of Agriculture, Ministry of Environment Protection of the Republic of Kazakhstan, UNDP/GEF Steppe Conservation and management project Altyn Dala Conservation Initiative: an international partnership of the Association for the Conservation of Biodiversity of Kazakhstan (ACBK), with the RSPB and the Frankfurt Zoological Society.

The Saiga antelope — one of the world's most threatened mammals was brought to the brink of extinction. Now conservationists, led by the Government of Kazakhstan in partnership with the Association for the Conservation of Biodiversity in Kazakhstan (ACBK), the RSPB, the Frankfurt Zoological Society (FZS) and the UNDP/GEF-funded project on Steppe Conservation and Management, are giving this Central Asian antelope and its diverse steppe habitat renewed hope.

Saiga antelope are grazers essential to the survival of globally significant steppe and semi-desert habitats that support a rich diversity of unique plants and animals: it disperses seeds of steppe plants over large distances; its droppings help to fertilize the soil; and the trampling action of its hooves pushes seeds into the soil, allowing them to germinate. Moderate and spatially proportional grazing is essential for the stability of many steppe communities. Indeed, many steppe fauna and flora species that are now globally threatened or near threatened rely on grazing by ungulates to provide favorable habitat conditions. The continued grazing of Saiga antelope and other large native mammals has kept the grasslands open, creating habitats for characteristic birds of the steppe, including the great bustard and the Critically Endangered sociable lapwing. Like the Saiga antelope, both of these birds are facing global extinction. A healthy population of Saiga antelope also creates a niche for scavenging birds and mammals, such as the black vulture and wolves.

Three of five Saiga populations have their main range in Kazakhstan: the Betpakdala Population, the Ustyurt Population and the Ural Population. The Ural and Ustyurt populations migrate between Kazakhstan and Russia and Kazakhstan and Uzbekistan, respectively. The migratory routes of the Betpakdala Populations are located completely within Kazakhstan. The population migrates about 1,000 km between winter and summer pastures.

In the 1970s, there were an estimated 1,000,000 (one million) Saiga antelope grazing the grasslands of Kazakhstan. Today, Kazakhstan is home to the largest part of the world population, but there are only 97,300 individuals left. After the collapse of the Soviet Union economic hardship of rural populations together with the opening of the borders to China led to massive poaching of the antelopes both for their meat and their horns, which are used by practitioners of traditional Chinese medicine. By 2002, the antelope's population was brought to the brink of extinction, and targeted poaching of males for their horns caused a major gender imbalance in the remaining population, exacerbating the dire situation. As a result, the World Conservation Union (IUCN) listed the species as Critically Endangered.

The main Kazakh population of this enigmatic critically endangered species is now recovering steadily, through a combination of building a greater understanding of Saiga antelope behavior, effective mobile anti-poaching units and ambitious landscape-scale conservation management to increase protection of grassland steppe and semi-desert habitats. These efforts have led directly to an improving picture for the Saiga antelope, with the primary Kazakh population in the Altyn Dala region rising from below 4,000 animals in 2002 to over 53,400 in 2010. Comparable to the famous vast herds of wildebeest on the African plains, Saiga antelope are migratory but very little is known about their current distribution and migratory routes. For the first time in Central Asia, 20 antelopes are now being tracked by satellite as they move south perhaps up to 800 kilometers across Kazakhstan from their calving grounds to their remote wintering sites. This will provide extremely critical information about migration, and in addition will indicate the critical habitats which need to be protected.

Even today, with wildlife populations struggling to recover, poaching remains a serious problem. More people have access to powerful machinery and weapons, improving access to vulnerable species. Thus, hunting not only threatens target species directly, but also leads to broader, ecosystem-level impacts associated with sharply reduced levels of grazing. In 2008, the ACBK established two mobile anti-poaching units, to complement the Kazakhstan government's anti-poaching efforts across the vast Kazakh steppes. Recently, the aerial anti-poaching unit spotted a poacher trying to evade arrest on a motorbike with five dead Saiga antelope. He was caught and the video footage of his attempted escape and capture will provide vital evidence in the forthcoming trial. Arrests are being made, but the number of poachers being caught is rising. So far this year the 12 Government + 2 ACBK anti-poaching units have discovered 17 cases of poaching, compared with eight in all of 2008.

Recognizing that protected areas have a potentially important role to play in conserving saiga, UNDP/GEF has partnered in 2009 with the conservation programme — known as the Altyn Dala Conservation Initiative (Altyn Dala means 'golden steppe' in Kazakh) in creating an integrated network of protected steppe habitat reserves extending through central Kazakhstan. Over 5.2 million hectares have already been legally protected, but Altyn Dala plans to increase this by up to five million hectares — more than twice the size of Wales. The project is supporting the government of Kazakhstan to develop a highly strategic, landscape-based approach to protected area expansion and management within the steppe zone, involving a system of various types of financially sustainable protected areas, ranging from permanent and fully staffed national parks (in the calving areas for saiga) to seasonally protected areas on saiga migratory routes; from fully Government-administered areas to areas where local communities play a central role in management.

UNDP/GEF-funded project will demonstrate techniques for increasing the effectiveness of steppe protect-

ed areas by enhancing the conservation-friendliness of intervening landscape areas. To enable the emergence of a supportive matrix of land uses, GEF will provide incremental support for the development and implementation of tools for landscape-level steppe conservation planning and management. For this purpose, a pilot area has been selected: the Irgiz-Turgai-Zhylanshyk (ITZ) area which covers approximately 6.2 million hectares and is located in Central Kazakhstan in the western-central portion of the 56.5 million ha. 'Altyn Dala' landscape. The Irgiz-Turgai-Zhylanshyk represents the traditional migratory range of the Betpak-Dala population of saiga and includes a major new PA — Altyn Dala Rezervat — being established under the Stage I expansion cycle. The area includes the most important summer pastures and calving areas of the Betpak-Dala population of saiga. At least three calving areas and the largest observed group of synchronized calving saiga (about 4000 females) seen in at least a decade has recently been discovered in this area[1]. The pilot area contains three PAs — Irgiz-Turgai Rezervat, Irgiz-Turgai Zakaznik and Sarykopa Zakaznik — totaling 1,162,750 ha., as well as the soon-to-be-established Altyn Dala Rezervat. With the UNDP/GEF support all the necessary documentations for the establishment of the Altyn Dala Rezervat and the expansion of the Irgiz Turgai have been prepared in 2010 and submitted for the final approval. The project has also established the system for ecological monitoring of Saiga population in central Kazakhstan, using satellite technologies and GIS, based on which the key areas for protection as seasonal reserves and corridors for migration have been identified. The project initiated a number of changes in Kazakhstani PA and wildlife protection legislation; initiated the development of new alternative scheme for protected area financing.

During May 2010, nearly 12,000 saiga antelopes were found dead in the Ural population in western Kazakhstan. This mass mortality reduced the Ural population to almost half of the reported size in 2009 census. The dead were mostly females who had recently given birth, which suggests that their calves have also died. The deaths are ascribed to pasteurellosis, caused by a bacterium that lives naturally in healthy individuals, but can cause acute illness and rapid death if the animal's immune system is compromised, either by another infection, poisoning, stress or malnutrition. The saiga is naturally prone to mass mortality caused both by disease and harsh weather, particularly in the winter. In the past, this was not problematic for the population was very abundant. The species is well adapted to cope with these events, with very rapid population recovery due to its high reproductive rate, if the population's natural resilience is not compromised. Currently, with all the saiga populations at very low numbers, due to poaching, the resilience to such events is low, and there is the very real potential for population extirpation, which is a major concern for the long term survival of the species.

The Committee on Forestry and Hunting of the Kazakhstan Ministry of Agriculture has mounted a rapid response, assisted by the Convention on Migratory Species, the Association for the Conservation of Biodiversity in Kazakhstan (ACBK), Fauna and Flora International, the Saiga Conservation Alliance, the UNDP/GEF project on Steppe conservation and an additional grant from the GEF Save our Species Fund. An education awareness campaign has already strated targeting the affected area in Ural region. Moreover, ACBK within UNDP GEF project conducted participatory monitoring in three locations (area of mass die off, area of migration with low poaching level, and in the calving area). The monitoring based on involving of farmers located on remote pastures rather than villagers was very effective because of their constant contact with Saiga and their better awareness on Saiga distribution and general ecology of the population. There are also plans, under the Convention on Migratory Species, for the development of an action plan for management and mitigation of future disease outbreaks, such as preparation of necropsy protocols and training of local vets.

[1] The discovery in June 2008 of a group of about 4,000 female Saiga calving synchronously in a hidden valley is one of the most outstanding successes of the ADCI. This grouping of the highly endangered ungulate is probably the largest and most important concentration of Saiga antelopes which has been observed during the last eight to ten years.

GLOBAL GEF PROGRAMS IN THE FOCAL AREAS OZONE DEPLETING SUBSTANCES, LAND DEGRADATION AND INTERNATIONAL WATERS

Investing in the Phase-out of Ozone-Depleting Substances

Ozone depletion threatens human health, agriculture, biodiversity, and global climate. In 1987, the Montreal Protocol — one of the world's most successful multilateral environmental agreements — set aggressive timelines for countries to phase out the substances that were causing rapid ozone depletion in the Antarctic stratosphere.

The GEF has addressed the issue of ozone depleting substances (ODS) to help CEITs meet Protocol targets by financing technology transfer, outreach and training, and programs to phase out ODS. Working with partners in both the public and private sectors, and complementing the work of the Multilateral Fund that supports developing countries under the Protocol, the GEF has approved up to US $210 million, leveraging up to US $250 million in co-financing for 28 ODS phase-out projects in 18 countries.

Among the GEF's most significant efforts to eliminate ODS are projects that transfer technologies to and strengthen institutional capabilities in CEITs. These projects have enabled the installation of non-ODS equipment and the adoption of practices by private sector businesses and industries, while providing CEITs with the legislative and policy frameworks that are necessary to sustain ODS phase-out. Almost 25 years after its establishment, the Montreal Protocol has become a successful model for resolving global environmental challenges. GEF investments in CEITs have contributed to the success of the Protocol by phasing out 20,000 ozone depletion potential (ODP)-tons consumption and 29,000 ODP-tons production since 1987.

Global environmental issues overlap and converge; solutions to climate change, biodiversity, ozone depletion, and persistent organic pollutants can no longer be applied in separate silos of action. At the GEF, we are increasing our work across focal areas, drawing on synergies among technologies, sectors, and issues to deliver simultaneously multiple environmental benefits.

For example, the GEF is leveraging resources from its chemicals and climate portfolios to support a catalytic project in Russia that aims to phase out ODS in refrigeration and air conditioning systems by substituting alternative technologies that are more energy efficient and avoid the use of alternative refrigerants which have adverse impacts upon the climate. Thus, the project achieves climate and ozone protection benefits. Similarly, other GEF projects promote the replacement of outdated appliances and equipment by more energy efficient systems which, at the same time, allow the shift to less ozone damaging refrigerants. The GEF is committed to supporting the phase-out of ODS as an integral part of sustaining our global environment.

Actions to Phase Out ODS

The environmental effects of ODS were first observed in the mid-1980s over the Antarctic stratosphere. Scientists, who had begun measuring ozone levels in 1975, estimated that ozone levels had declined by 60%–70% from their pre-1975 levels (GEF 2009a). Substances commonly found in refrigerants, foams, aerosol sprays, fire retardants, and pesticides were identified as the cause of the depletion,

which was allowing increased amounts of dangerous ultraviolet-B (UV-B) radiation to reach the earth. This discovery prompted inter-governmental action to reduce ozone-depleting substances (ODS).

Reversing Ozone Depletion

Due in part to the Montreal Protocol, its amendments and adjustments, and the work done to achieve ODS reductions to date, global and annual production and consumption of ODS decreased by 95% from 1989 to 2005 (CCSP 2008). As a result, total levels of ODS and ODS substitutes released into the atmosphere, including hydrofluorocarbons (HFCs), also decreased during this period, declining by 81,1%.

The concentration of ozone-depleting substances in the atmosphere has begun to decrease since the enactment of the Protocol. Effective equivalent troposphere chlorine (EECl), a common measure of the concentration of ozone-depleting substances in the atmosphere, has decreased by 14% from a peak of 2,700 parts per trillion in the mid-1990s. A significant reduction in atmospheric concentrations of the following ODS have also been found:

- 93% reduction in methyl chloroform
- 6% reduction in CFCs
- 24% reduction in methyl bromide.

The work that has been done to date has helped to begin the reversal of stratospheric ozone depletion. However, there is still work to be done. Due to longer atmospheric lifetimes, halon and HCFCs have not stabilized in the atmosphere yet. As a result, atmospheric concentrations of these ODS are still increasing. In addition, CFC emissions have failed to decrease as significantly as other ODS because of continued use in developing countries and emissions from stockpiles in developed countries (EPA 2008). Compounding these issues, many countries with economies in transition (CEITs) in Central and Eastern Europe, Russia, and the republics of the former Soviet Union continue to have difficulty meeting phase-out targets. When the Montreal Protocol was approved in 1987, these countries were not classified as Article 5 countries, requiring them to meet aggressive ODS phase-out targets and making them ineligible for financing under the Multilateral Fund.

However, the dissolution of the USSR in 1990–1991 forced them into a period of economic and political transition, justifying the global community's support to meet their obligations under the Protocol. Since 1991, the GEF has assisted 18 non-Article 5 CEITs in efforts to meet the ODS phase-out targets of the Montreal Protocol. The GEF has supported 30 projects that have transferred new technologies, enhanced recycling operations, and provided training to reduce ODS use in these countries.

To date, the GEF has facilitated a large drop in the consumption and production of CFCs, but work still needs to be done to address other ODS, such as HCFCs. The GEF remains committed to assisting eligible recipient countries in meeting the ODS phase-out targets set by the international community under the Protocol.

Gef Project Examples in The Field of Ozone Depleting Substances

Over the past 19 years, the GEF has approved up to US $210 million with $250 million in co-financing from government, private sector organizations, and other stakeholders through four funding replenishment cycles. This level of resources has aided 18 CEITs in meeting ODS phase-out targets through support for 28 projects (GEF 2009a).

The GEF portfolio of ODS phase-out projects includes a range of activities that aim to phase out the greatest amount of ODS at the lowest cost on a country or regional level. These activities include building institutional strength, implementing training activities, conducting education and outreach, improving enterprise sustainability, and supporting recovery, recycling, and reclamation (3R) of ODS. The goal is to enable CEITs to comply with the Protocol and adopt new environmentally sound technologies, tools, and techniques that can aid the growth of their industries.

The GEF uses replenishment cycle funding to provide support to ODS phase-out projects via implementing agencies, in the form of investment grants, partial loan guarantees, and special-purpose funds. These agencies include the World Bank, the United Nations Development Program (UNDP), the United Nations Environment Programme (UNEP), and the United Nations Industrial Development Organization (UNIDO). Once projects are established, National Ozone Units (NOUs) in each country help to facilitate coordination between implementing agencies, government, and private sector stakeholder sand track the progress of ODS phase-out during the course of the project.

The success of the GEF's efforts to help CEITs meet the Protocol's phase-out targets is evident in the reduced consumption and production of ODS in Eastern Europe and the republics of the former USSR. GEF-supported projects have helped phase out 20,000 ozone depletion potential (ODP)-tons consumption and 29,000 ODP tones production. The GEF plans to build on this success by continuing to support ODS phase-out in CEITs through its fifth funding replenishment cycle (GEF-5).

GEF and Ozon Depleting Substances in the Russian Federation

From 1996 till 2004, GEF took part in financing GEF Project "Russian Federation: Ozone Depleting Substances (ODS) Phase out". Within the framework of this project, a campaign for increasing public awareness was performed as well as sub-projects were implemented for phasing out ODS consumption in refrigeration, foam, and aerosol industries. GEF departments for ozone layer preservation and climate change mitigation worked together on the CFCs phase out

project which implied introduction of environment-friendly technologies. The amount of co-financing for this project constituted 24.30 million US dollars, while GEF provided 49.04 million US dollars. The goal of this GEF Project was to stop the use of CFCs as propellants at six largest enterprises producing domestic and medical aerosols and as refrigerants and foaming agents at six enterprises producing household, commercial, and industrial refrigeration equipment, car accessories, and construction materials. Besides, the amount of financing included conversion to ozone-safe technologies at more than twenty large service centers across the country which perform refrigeration equipment maintenance and technical servicing. In the course of this project implementation, the regulatory basis was developed for further work with ODS for the purposes of fulfilling Russia's obligations under the Montreal Protocol. From May, 1995 till June, 2001, Russian Government adopted nine resolutions and orders including those prohibiting ODS and ODS-containing products import, as well as manufacture of ODSs listed in Annexes A and B to the Montreal Protocol. Together with 10 developed countries, GEF took part in World Bank's Project "Special Initiative for ODS Production Closure in the Russian Federation", with the total amount of financing 26.2 million US dollars. As a result of those projects implementation, ODS (except for HCFCs) consumption and production in Russia stopped almost completely. In the consumption and production sectors, HCFCs in the amount of over 1,000 ODP are still to be phased-out.

GEF Project Examples in Land Degradation

Investing in sustainable land management (SLM) to control and prevent land degradation in the wider landscape is an essential and cost-effective way to deliver multiple global environmental benefits related to ecosystem functions. In particular, GEF financing to combat land degradation takes into account emerging issues for SLM in rural production landscapes, such as: management of competing land uses and resulting changes to secure ecosystem services, management of the exploitation of natural resources to balance short-term economic gains with the need for ecological and social sustainability, and adaptation to climate change and potential for mitigation through reduced emissions and carbon sequestration. As a result, the projects also embody integrated natural resource management principles to maximize global environmental and development benefits.

Catalyzing Sustainable Rangeland Management in Kazakhstan

Rangelands cover 70 percent of Kazakhstan's land area, nearly 188 million hectares. Historically, rangelands were a driving force in the country's economy as a source of fodder, food, fuel, and medicinal plants, among other things. Most of these lands are drylands, of which an estimated 99.2 percent are prone to desertification. Decades of poor livestock management practices have resulted in vast areas of degradation. Degraded rangelands cover more than 48 million hectares across the country. The main driving forces of rangeland degradation are policy, regulatory, institutional, socio-economic, financial, and knowledge barriers. The total annual economic loss due to a mixture of desertification and poor agricultural management in Kazakhstan is estimated at approximately $700 million. Land degradation particularly affects poor households.

Kazakhstan is part of Central Asian Countries Initiative for Land Management (CACILM), a regional partnership dedicated to combating land degradation and improving rural livelihoods. The CACILM countries and development partners (including Asian Development Bank, United Nations Development Programme (UNDP), German Technical Cooperation, and other bilateral and multilateral donors) have developed a 10-year program of country-driven action and resource mobilization (2006–2016) for sustainable land management. Under the auspices of this program, the Kazakhstan government identified rangelands as a major focus for combating land degradation. The overall

focus is to remove barriers to sustainable rangeland management (SRM) by creating an enabling environment and capacities at local (or rayon) and provincial (or oblast) levels to create models that are also appropriate in the wider context of CACILM.

The specific objective of the GEF-financed medium-sized project on Sustainable Rangeland Management for Rural Livelihood and Environmental Integrity, with a GEF grant of $950,000 and cofinancing of $2,899,200 for a total project cost of $3,849,200 (GEF Agency: UNDP), is to demonstrate good practices in rangeland and livestock management that promote both the ecological integrity of natural grasslands and rural livelihood. The project will strengthen capacities at the systemic, institutional, and individual levels, promote an enabling environment at the policy and regulatory levels, and implement demonstration activities to catalyze innovation in production processes as models for up-scaling. Innovations in rangeland management will be evaluated, including approaches to seasonal mobility that combine traditional Kazakh nomadic and transhumant systems with new methods for pasture management. These practices will improve and safeguard ecosystem services, while at the same time generating economic benefits for rural communities and the national economy.

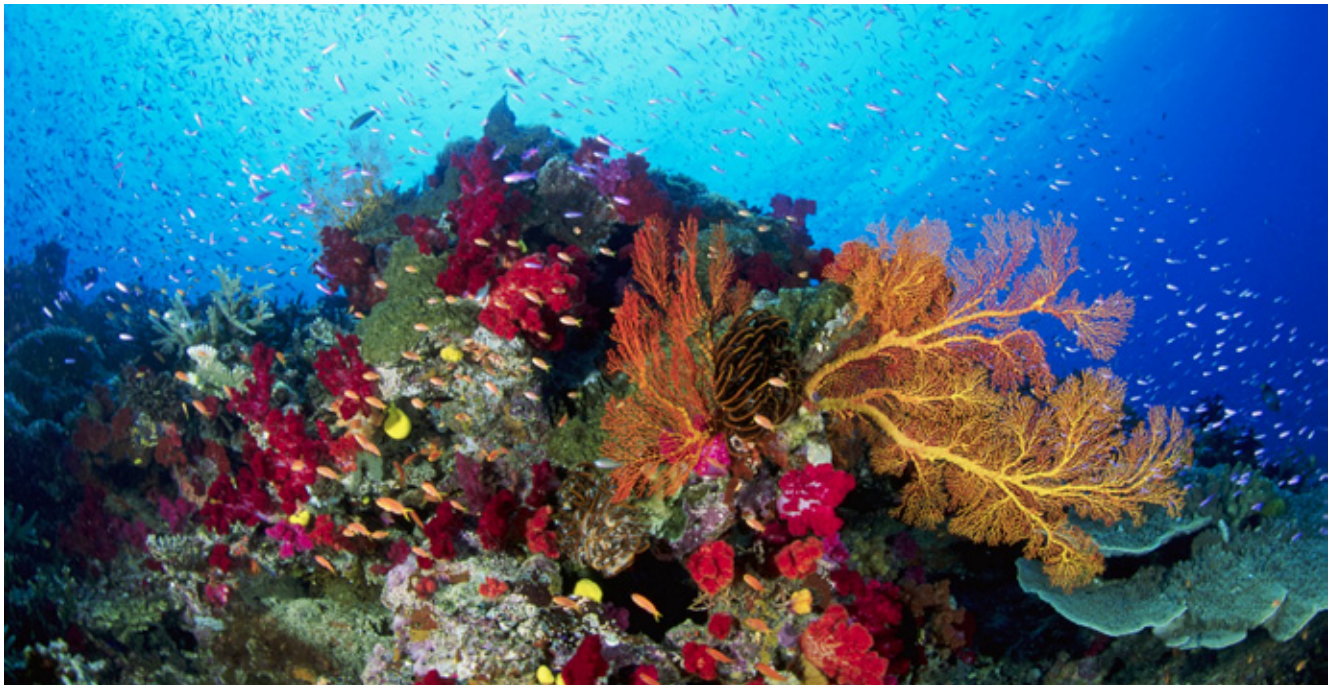
Reducing Conflicting Water Uses on the Island of Hispaniola

The Artibonite watershed, a physically, culturally, and biologically diverse binational watershed system spanning 9,550 square kilometers, is the longest on the Island of Hispaniola, and provides vital ecosystem services that benefit the poorest areas of the Dominican Republic and Haiti. The Artibonite watershed is the source of 30 to 50 percent of Haiti's energy needs, and the downstream valley is the main rice-growing area in Haiti, with more than 34,500 hectares of irrigated land. In both nations, the Artibonite provides fertile soil to support coffee production in the uplands and small areas of deep soils in the valleys that support agriculture and grazing. Yet these critical ecosystem services and functions are threatened by severe land degradation, growing demands on water resources, and the absence of an integrated management framework. The provision of long-term ecosystem services is curtailed by persistent threats to ecosystem function, stability, and integrity in the form of:

- conversion of diverse forested ecosystems into other simplified modes of production;
- inappropriate land use with respect to the biophysical characteristics and ecosystem functionality; and
- damaging agricultural practices, especially in the upper watersheds, in the form of migratory agriculture, clear-cutting of tree stands, little or no crop regulation or rotation, and hillside tillage.

Both Haiti and the Dominican Republic recognize that joint efforts to address policy, institutional, economic, and social drivers of these threats are crucial to the island's long-term socioeconomic stability. To meet increased water demand, including for the domestic needs of a much larger population, both nations have plans to explore and extract increasing amounts of groundwater, as well as to improve surface water capture and infrastructure. There are more than $30 million in baseline investments to improve natural resource management in the area. Although very significant in their targeted areas, there is widespread agreement among donors and partners on the need for an overarching binational Integrated Watershed Management Plan. The GEF-financed multifocal-area (land degradation and international waters) project on Reducing Conflicting Water Uses in the Artibonite River Basin through Development and Adoption of a Multifocal Area Strategic Action Program, with a GEF grant of $3.08 million and cofinancing of $7.1 million for a total project cost of $10.18 million (GEF Agency: UNDP), responds to this critical need.

The project aims to remove the major barriers and constraints to sustainable-land and water-resource management and generate national, regional, and global benefits by stimulating political commitment to collective action and then scaling up with innovative policy, legal, and institutional reforms; demonstrations; and sustainable financing. It is structured around cross-focal-area synergies and has a landscape (watershed) focus that recognizes the indelible linkages between sustainable management of both water and land resources, and that will focus on restoration and maintenance of ecosystem integrity, services, and functions. The project will establish and strengthen national and regional frameworks for land and water governance, applying integrated water resource management principles and sustainable land management approaches. At the global level, it will result in improved ecosystem resilience and productivity, and enhance ecosystem services, including flood regulation. Coastal and marine ecosystems will benefit from reduced sedimentation and pollution loads.



GEF Project Examples in International Waters

Fresh water, salt water, and their living resources know no borders. With 70 percent of the Earth being ocean and 60 percent of the land mass lying in cross-border surface and groundwater basins, transboundary water systems dominate the planet. These water systems produce food for global trade and domestic use, power industry and economies, quench thirst, and nourish ecosystems that support life. Globally, transboundary waters are overused and overpolluted and suffer from serious multicountry and national governance failures. Conflicting uses among states create tensions as degradation and depletion expand — and increased climatic variability and change just make matters worse.

The GEF International Waters (IW) focal area addresses the very complex sustainable development challenges faced by states sharing transboundary surface, groundwater, and marine systems. Challenges range from pollution, loss of habitat, and ship waste, to overuse and conflicting uses of surface and groundwater, over-harvesting of fisheries, and adaptation to climatic fluctuations. The GEF IW focal area serves a unique role in building trust and confidence among states for catalyzing collective management of these large water systems while providing benefits for water, environment, health, community security, and regional stability.

Sustainable Mediterranean Programmatic Approach

Sustainable MED is aimed at improving on-the-ground sustainability for freshwater, coastal, and marine resources. Six out of 10 proposed full-size projects were approved in the international waters focal area, focusing on priority investments that address integrated surface and groundwater management in selected watersheds, domestic and industrial wastewater treatment and reuse in priority hotspots, and coastal ecosystem management. In the context of Integrated Water Resources Management, the program supports projects that address droughts and floods as a result of climatic variability. Additionally, the program gives priority to projects that assist countries in meeting their obligations towards the new Integrated Coastal Zone Management Protocol under the Barcelona Convention.

Marine Coral Triangle Initiative

The Coral Triangle Initiative (CTI) is a programmatic approach approved by the GEF Council in 2008 that covers marine waters of East Asia and the Pacific, which are the most biodiverse on the planet. The multiagency and multifocal area program is led by the Asian Development Bank (ADB). It aims to reduce habitat degradation caused by pollution, coastal erosion, and sedimentation, and reorient the social and economic drivers of excessive and destructive fisheries and marine resources extraction to address the goals of improved food security, long-term coral reef conservation, and climate adaptation. The Philippines, Indonesia, Malaysia, Papua New Guinea, the Solomon Islands, Fiji, and Vanuatu are working together in the CTI to support regional, national, and local governance improvements in the Coral Triangle, along with GEF agency partners and NGOs. The remaining three international waters projects under the CTI were approved by the Council during the year.

GEF Project Examples in Biodiversity

The GEF's strategy to conserve and sustainably use biodiversity focuses on some of the key direct drivers(habitat change, overexploitation, and invasive alien species)and indirect drivers (policy and regulatory frame works, institutions, and governance) of biodiversity loss and provides support to the highest leverage opportunities to achieve lasting conservation and sustainable use of biodiversity. The goal of the GEF's biodiversity program is the conservation and sustainable use of biodiversity and the maintenance of ecosystem goods and services.

To achieve this goal, the GEF strategy encompasses four objectives:

- Improve the sustainability of protected-area systems;
- Mainstream biodiversity conservation and sustainable use into production landscapes, seascapes, and sectors;
- Build capacity to implement the Cartagena Protocol on Biosafety;
- Build capacity on access to genetic resources and benefit-sharing.

The three project examples of good practice in conservation and sustainable use highlighted below demonstrate GEF's strategy in action. Each project shows the contributions that biodiversity makes to local and national economies, and demonstrates that halting the loss of biodiversity is indeed possible.

Maintaining Coastal Biodiversity and Natural Resources as Mainstays of Guinea-Bissau's Economy

Guinea-Bissau houses a wealth of biodiversity that has local, national, and global significance, particularly in its vibrant coastal zone. The coastal zone is a regionally important breeding and nursery zone for fish and crustaceans, and shelters regionally important stocks of five turtle species, marine mammals such as the bottlenose and the Atlantic humpback dolphin, sharks, crocodiles, the largest population of manatees in West Africa, and a population of seagoing hippopotami. Approximately 80 percent of the population lives in the coastal zone, where most economic activity occurs. The major threats to coastal and marine biodiversity are shifting agriculture, rice production, artisanal fishing, and the extraction of fuel wood from forests and mangroves for the production of charcoal and the smoking of fish.

The GEF is helping Guinea-Bissau address these threats through the Coastal and Biodiversity Management Project(CBMP) (GEF project grant: $4.8 million; cofinancing: $6.31 million; duration: 2005–2010). Under the project, the Institute for Biodiversity and Protected Areas (IBAP) developed a long-term strategy for protected areas and biodiversity conservation, consolidated its presence in the terrestrial and marine protected areas, and further expanded the protected-area network. As a result, management effectiveness has been improved in at least 3,500 square kilometers of terrestrial and marine protected areas. In addition, more than 70,000 people who live in and around the five national parks benefit directly from grants that have been disbursed through the Fund for Local Environmental Initiatives (FIAL), which supports environmentally friendly development in communities in and around the parks, thereby decreasing pressure on globally significant biodiversity and helping increase local incomes. Community income-generating activities, such as sustainable wetland rice production and fish processing, have generated an internal rate of return of more than 20 percent. Joint IBAP and FIAL efforts have improved relationships with local communities and enhanced their commitment to conservation, thereby ensuring post-project sustainability.

Protected Areas Pay in Namibia

All countries are challenged to find creative ways to finance the management and administration of protected areas so that these "cornerstones" of conservation can actually meet the countries' conservation objectives. In Namibia, the GEF is funding a protected-area project, Catalyzing Sustainability of Protected Area Systems: Strengthening the Protected Area Network (GEF grant: $8.550 million; cofinancing $33.677 million; duration: 2006–2012). It is designed to maximize the full potential of the protected-area system by 1) improving the policy framework for financial support for protected areas, 2) increasing management capacity, and 3) implementing new protected-area management partnerships.

Namibia lies at the heart of the species-rich Namib-Karoo-Kaokoveld Desert, one of the World Wildlife Federation's (WWF) Global 200 Ecoregions. The country has a high level of endemism, and Namibia's conservation efforts have also made the country a stronghold for populations of large animals, such as black rhinoceros (almost a third of the world's population) and cheetah. The project has achieved impressive results to date, none more so than the advances in protected-area financing. A comprehensive analysis of the protected-area system indicated that protected areas contributed 3.1 to 6.3 percent of the GDP through park-based tourism only, without including other ecosystem services values, and the economic rate of return on the government investment over 20 years was as much as 23 percent if the tourism concession potential is fully realized. Using these study results, the government increased the annual budget for park management and development by 300 percent in the past four years.

The Ministry of Finance also agreed to earmark 25 percent of the park entrance revenue to be reinvested in park and wildlife management through a trust fund, providing up to $2 million in additional sustainable financing per year. In addition, the National Policy on Tourism and Wildlife Concessions on State Land was approved by the cabinet in 2007 to maximize the economic potential of protected areas. In the past two years since the policy has been implemented, more than 20 new tourism and hunting concessions were approved, generating more than $1 million per year in fees payable to the government. A majority of these concession rights in protected areas were granted to communities neighboring these areas, thus directly benefiting local people from revenue and jobs created from the concessions.

Forgotten Agricultural Biodiversity Makes a Comeback in Georgia

The direct-use value of biodiversity often goes overlooked when evaluating the importance of biodiversity. With support from the GEF project, Recovery, Conservation and Sustainable Use of Georgia's Agrobiodiversity (GEF grant: $0.98 million; cofinancing: $1.72 million; duration: 2004–2010), Georgian farmers are reclaiming forgotten crop varieties and land races while they diversify their agricultural production. The project aims to revive the country's agrobiodiversity by promoting he reintroduction and sustainable use of the country's agrobiodiversity through improving access to seed stock and planting material, providing extension services to farmers, and facilitating experience-sharing among farmers, research stations, and other stakeholders.

Georgia covers a relatively small area of 69,700 square kilometers, and is home to more than 350 local species of grain crops; more than 100 species of seed and stone fruit trees, nuts, and wild berries; and 500 local varieties of grapes. Before the early 20th century, Georgia's agricultural production was diversified. During the Soviet era, most families and collective farms grew introduced varieties, while agricultural research centers cultivated local landraces. When financial support from the Soviet Union ceased, the loss of agrobiodiversity intensified as agricultural research centers and extension services collapsed. Agricultural production was marked by an increased use of introduced varieties and the application of agrochemicals. By the mid-1990s, local varieties were simply unavailable for planting and research centers lacked the capacity to assist farmers to reintroduce them.

The project has established a seed multiplication system to encourage local farmers to use and sow local landraces. As a result, 28 landraces and varieties (52 percent of all known for Georgia) are now used for subsistence production; seven land races (13 percent of all landraces) are in commercial use. More than 80 percent of the households that are cultivating landraces and local varieties are reporting higher pulse diversity, diversification of the family diet, and improved nutrition levels. The revived landraces and local varieties have demonstrated a much higher resistance to drought, pests, and harsh winters. Three farmer cooperatives confirmed higher incomes from trading their harvests and seeds. The six revived native legume crops are now being sold to retailers in local markets at a 10 percent premium compared with the imported common beans widely available in Georgia. For the past three years, the volume of sales has been growing at almost 100 percent each year.

BY MONIQUE BARBUT,
CEO AND CHAIRPERSON OF THE GEF

THE GEF AND THE PRIVATE SECTOR

Why should private companies invest in biodiversity?

The GEF was established in 1991 to address two major global environment problems — biodiversity loss and climate change. Since then, we have helped developing countries protect 634 million hectares of land — an area 60% the size of Europe. Protected areas have sometimes been criticized for presumably preventing people from accessing natural resources. However, the sheer scale in the global coverage of protected areas is a testimony that the concept, in its many forms, has been embraced by virtually all governments, civil society and local and indigenous communities, all in a relatively short period of time. There are over a hundred thousand jobs and alleviating poverty throughout the developing world.

But this is not enough because there is not enough public money in the system to tackle the magnitude of the problem. I believe we have to bring in the most powerful economic development force of society into the mix — the private sector. There is a reason why companies are interested in biodiversity — and it is not necessarily just about philanthropic money — always scarce, by the way, because giving away profits is not part of any business plan of a successful company. What is universal is the reinvestment of profits in their core business — and this is our latching point.

Many businesses — big and small — have come to realize that a portion of their value depends on biodiversity. Let's take an example from the extreme side of the spectrum — Walmart, the world's largest corporation by revenue. The power of such global business to introduce sustainable practices cannot be underestimated — and they have been investing over half a billion dollars in sustainability projects that, for example, have made organic cotton a huge success for the company. One may find surprising that Walmart, a company whose business model is selling for the lowest possible price, is now the largest global buyer of organic cotton. This happened in a very short time period, a consequence of the ripple effect that a retail company like Walmart has on its supply chain. The company has also committed to purchasing, by 2011, all wild-caught fish for the U.S. market from Marine Stewardship Council (MSC)-certified fisheries. These decisions are not being made solely on the basis of corporate responsibility guidelines. Walmart is making money by going sustainable.

Why is the GEF interested in getting more involved in public-private partnerships? It is because going green has some unintended consequences, particularly for the people in countries in most need of GEF assistance. When Walmart adopts sustainability requirements for sourcing the fish going to their stores, the costs of adjusting to this new reality affect disproportionally the poor and undercapitalized. They, in turn, may have no other option than to continue to make a living though less sustainable means — or be pushed out of the business altogether.

The GEF is also interested in helping to open new premium markets for products harvested sustainably by communities in developing countries — by sharing the initial costs of jump-starting new businesses or by providing guarantees to offset risks. We have also examples coming

from the very small scale — GEF has worked with the World Bank identifying and rewarding dozens of small green businesses around the world through the Development Marketplace initiative — and also with our very successful $50 million/year Small Grants Program.

These are the strategic entry points for the GEF, and we are on the outlook for the most promising linkages in the interface between business and biodiversity.

Last year, together with the World Bank, IUCN, and Nokia, we launched the Save Our Species program — or SOS, for short. With SOS we have an initial goal to mobilize $30 million over 5 years, but what we really expect is that it will become one of the most comprehensive funds for threatened species protection worldwide — and more importantly — with a strong insertion of corporations from all over the world. Businesses will not only bring additional resources to match what we and other funders are contributing, but will certainly help spread the word on biodiversity through their unsurpassed penetration into society's affairs. The initial financial commitment by the GEF and the World Bank is providing assurance and hopefully having a leveraging effect for corporations to come together, including companies that are using threatened species for their company's marketing, such as logos and product characters. This effort will complement what GEF is already doing by investing close to $50 million/year in projects that support hundreds of threatened species. It is our ambition that SOS will expand to the scale of our other investments, and truly become a global fund for species protection.

New Granada Treefrog

With this and other related initiatives, we are demonstrating that there is an enormous potential for the private sector to partner with the conservation community. Biodiversity is increasingly in short supply. This is bad. But supply drives value. Value drives investments. And this time, a good portion of the returns against your investments will be captured by our children and grandchildren. We are excited to explore this grand opportunity together.

VIENNA ENERGY FORUM 2011

energy for all—time for action

Vienna, Austria, 21-23 June 2011

UNIDO organizes 2011 Vienna Energy Forum, Ministerial meeting on energy and green industry, invites the Círculo de Montevideo

From 21 to 23 June, the Hofburg Palace in the Austrian capital will host the **Vienna Energy Forum (VEF)**. This year this major international event is expected to bring together some 1000 participants, including heads of state, policy-makers, experts, representatives of civil society and the private sector.

Together they will explore the challenges of the 21st century from the perspective of energy and discuss how to overcome energy poverty in developing countries for sustainable development, and to move from declarations of intention to tangible action on the ground.

The Global Environment Facility (GEF), which marks its 20th anniversary this year, will be represented at the Forum by its CEO and Chairperson, Monique Barbut.

The Forum is held every two years, and is organized jointly by United Nations Industrial Development Organization (UNIDO), the Austrian Federal Ministry for European and International Affairs and the International Institute of Applied Systems Analysis (IIASA).

The discussion at the Forum will offer building blocks for putting together a strategy for prioritizing the energy access agenda. Discussions will also focus on energy efficiency and on reducing global energy intensity.

The 1992 Rio Earth Summit revolutionized the global development agenda by introducing the concept of "sustainable development" as a policy framework based on the three pillars of economic, environmental and social sustainability. It is now widely recognized that energy is central to sustainable development and poverty reduction efforts. Energy affects all aspects of development — social, economic, and environmental — including gender inequality, economic growth, climate change, food security, health and education, and the achievement of the Millennium Development Goals.

Perhaps the most critical challenge related to energy for sustainable development is how to increase access to affordable, modern energy services, while also ensuring that the energy services provided do not cause further adverse environmental and socio-economic impacts. This point was well captured in the report launched in 2010 by the UN Secretary-General's Advisory Group on Energy and Climate Change, which is chaired by the Director-General of UNIDO Kandeh K. Yumkella. The report highlighted two fundamental energy issues — energy access and energy efficiency — and their close links to sustainable development and climate change.

The 2011 Vienna Energy Forum will take place about one year before the United Nations Conference on Sustainable Development (Rio 2012) for which there is a number of preparatory events and conferences. The programme of the VEF is designed to allow a diverse and rich dialogue on the key elements that closely overlap with those of the Rio 2012 conference, including the launch of the Global Energy Assessment — an initiative to define a new global energy agenda for a rapidly changing world involving more than 500 scientists and experts around the world. VEF will also look at strategies, policies and options for decarbonising the energy system in support of a green economy and achieving universal access to modern energy carriers; at technologies and institutions for cleaner energy supply; at investment in infrastructures and supporting institutions; and at financing the energy transformation in the decades to come with particular focus on energy access for all, decarbonisation and clean development.

Given the centrality of energy issues to every aspect of the sustainable development agenda and the opportunity that the Vienna Energy Forum provides for giving further consideration of these issues ahead of the Rio 2012 Conference, a **Ministerial level meeting** will be organized on the margins of the Vienna Energy Forum. With a view to contributing to the formal intergovernmental preparations to the agenda for Rio 2012 and its outcome, the Ministerial meeting will focus on expanding clean energy access; reducing energy intensity; and building a green industry in the context of sustainable industrialization and poverty eradication.

On the invitation of the Director-General of UNIDO, the influential **Círculo de Montevideo** will hold this year's annual meeting in Vienna from 22 to 24 June, on the sidelines of the Vienna Energy Forum. The **Círculo de Montevideo** unites 30 prominent members, including former presidents and heads of state, academics, policy makers, leaders of international agencies and global leaders in different areas. They meet to review and identify strategies and means for promoting sustainable industrial development in Latin America. Members of the **Círculo de Montevideo** are expected to substantively contribute to promoting green industry and the sustainable energy access agenda by way of their active participation in the high-level panels of the Vienna Energy Forum and through their own roundtable discussions on how to better foster and link green industry and energy for sustainable development in Latin-America. The outcome of their deliberations and final meeting report will greatly benefit UNIDO's work in this area.

UNIDO IN RUSSIA
Special Edition

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