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WHEN
FOUNDATIONAL ACTS
GENERATE SIGNIFICANT
IMPACTS

HIGHLIGHTS FROM INSIDE THE GEF-5 WBG-GEF PROGRAM



The Global Environment Facility (GEF) brings together in partnership 183 countries with multilateral institutions, civil society organizations (CSOs) and the private sector to address global environmental issues that also support national sustainable development initiatives. The GEF provides grant funding for activities that target issues surrounding biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants. Since 1991, the GEF has disbursed \$11.5 billion in grants, which has leveraged \$57 billion in co-financing, for over 3,215 projects in more than 165 countries. [<http://www.thegef.org/gef/>]

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Foreword

Accomplishments achieved within the World Bank Group (WBG)-GEF portfolio provide reason to feel proud. As the experiences highlighted within this document clearly demonstrate, the WBG-GEF Program has helped pioneer so many important, long-lasting programs and partnerships, as well as new technologies, regional initiatives, and investment models. These activities have brought, and continue to bring, people together to work across boundaries, issues and institutions to ensure that global environment issues are addressed as integral elements of sustainable development.

WBG teams are actively engaged, day in and day out and in some of the farthest reaches of the globe, supporting national teams in executing GEF-funded projects on every continent. Our staff can be found on the ground in hiking boots working with national parks on their management plans, in remote villages discussing how local cultural practices can bring about environmental change, convening meetings with counterparts and government ministries working together for the first time, meeting with power utilities to discuss introducing feed-in tariffs for renewable energy, observing community meetings to inform and strengthen project designs, meeting with local banks and credit associations to discuss novel financing approaches, and convening partner donors and aid organizations to work together for a common cause.

As just one of hundreds of WBG staff who contributed to the success of the WBG-GEF Program over the past two decades, I am privileged to have witnessed the impact of this program time and time again, including the scale-up effect that robust early stage GEF investments have made. Countless examples of follow-on investments have helped sustain early stage funding, and partnerships and new institutions were created that continue, on their own, to expand and multiply the work of the GEF today.

This document attempts to provide a flavor of the richness of the Program's impacts and results, and touches upon the features it draws from the WBG's unique institutional capacity, which helps define the WBG-GEF Program's specific approach in assisting countries to make the best use of their GEF funds. We believe it is impossible to separate global environmental issues from our core mission of poverty reduction, given the strong connections between the two and that fact that many of these issues, such as climate change, do already impact economies in negative ways on a global scale. The program thus aims to turn collective challenges into opportunities for change and transformation along a more sustainable economic development path, working with partners to innovate to increase impact at the global, regional, and national levels. Looking ahead in GEF 6, we look forward to continuing to do our part to make the best use of these critical funds to help catalyze change.

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Karin SHEPARDSON
GEF Executive Coordinator
The World Bank Group







Portfolio Overview

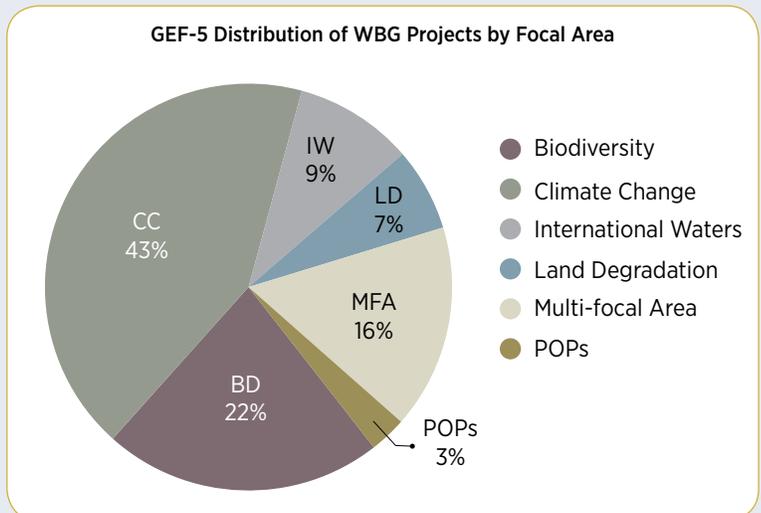
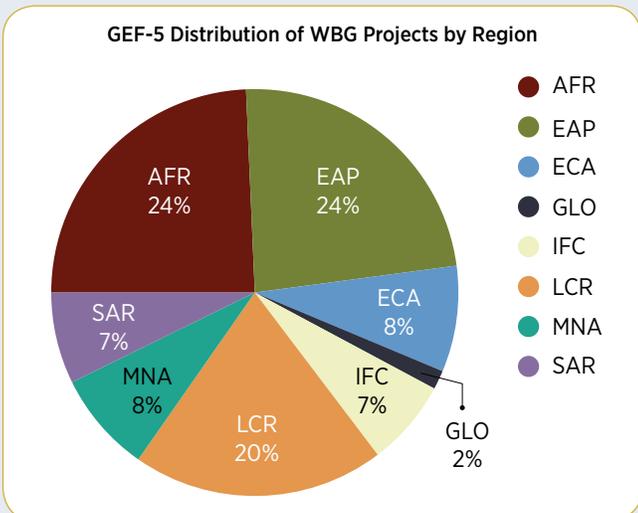
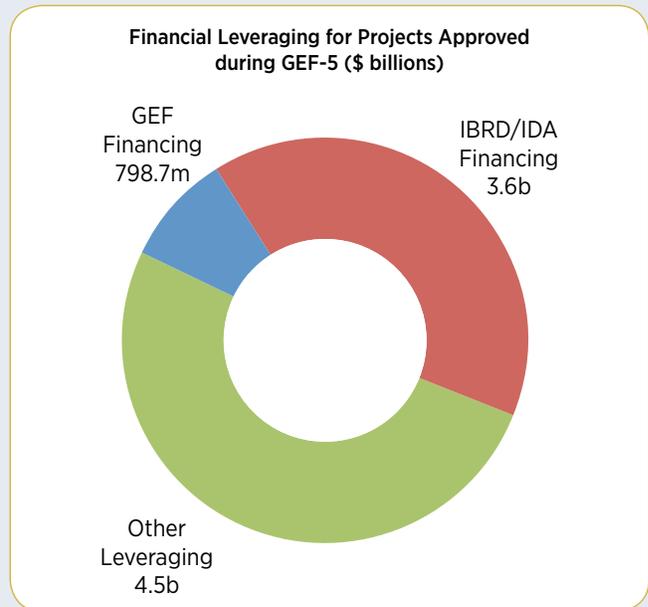
The World Bank Group (WBG)-GEF Program is one of the institution's longest standing trust-funded programs. Since 1991, it has helped stimulate investment to boost global environmental benefits through the implementation of more than 790 projects in 120 countries. Our work with the GEF has focused on some of the world's most complex environmental risks: climate change, biodiversity loss, polluted international waters, land degradation and desertification, and persistent organic pollutants, all of which impact poverty and sustainable development and therefore, are of direct relevance to the WBG's mission to end extreme poverty and boost shared prosperity. Today the program supports a portfolio of over 200 investments integrating policy reform and technical assistance that encourage innovation, promote 'readiness' for scale-up of second generation investments, and stimulate green growth.

During the GEF-5 Replenishment period (2010-2014), the WBG-GEF partnership entered its third decade. The overall size of the portfolio, including projects that became active, closed or were approved by the GEF Council for preparation, totaled US \$2.9 billion. Thirty-six (36) percent of the WBG's programming was blended with IBRD or IDA financing, and over \$25 billion in additional funding and resources were leveraged from a host of other financing sources and global donor programs to make the most of shared agendas. These include: the Climate Investment Funds (CIF), carbon finance, bilateral donors, the Global Fund for Disaster Reduction and Recovery (GFDRR), the Energy Sector Management Assistance Program (ESMAP), and the Water Partnership Program (WPP). Channeling GEF grants through investment frameworks that promote synergies and lay the foundations

for entry by other financing partners generates significant economies of scale and underscores the WBG-GEF Program's key value proposition within the GEF partnership: our ability to 'crowd-in' a broad range of partners from not simply across the institution, but also with business and civil society, linking their knowledge and financing to that of the WBG to better deliver solutions to client countries.

The WBG's GEF Program draws upon a specialized community of practitioners to bring the best technical and policy knowledge, skills and solutions to the service of client countries. By sharing innovative approaches that we know work when tackling serious environmental issues, the WBG-GEF Program builds capacity that serves local needs for global impact.

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How the Funds are Used

CLIMATE CHANGE-MITIGATION AND ADAPTATION

Grants channeled in support of GEF Climate Change focal area mitigation objectives support low-carbon and carbon-resilient development. Grant funding is often paired with other sources of financing to expand impact and increase efficiency further leveraging our impact. Funds secured through the Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF) allow the WBG-GEF Program to help countries reduce vulnerabilities, build resilience, and adapt to a changing climate by investing in climate resilient approaches and promoting synergies between ecosystem-based adaptation and disaster risk reduction.

BIODIVERSITY

Living natural capital underpins economic growth and human well-being globally. Its conversion and degradation contributes to climate change and reduces resilience. That is why safeguarding natural eco systems and promoting investment in conservation and sustainable use of biodiversity underpin the WBG-GEF Program's work in the GEF biodiversity focal area. Program efforts seek to: build capacity and foster knowledge, understanding and education; support sustainable conservation and management of protected areas; integrate biodiversity conservation into production landscapes; and, design sustainable financing schemes to encourage long-term biodiversity conservation.

LAND DEGRADATION

WBG-GEF Program projects that aim to stem land degradation focus on the demonstration of best practices for land and water management, prevention of carbon loss from forests, soil erosion and salinization, recovery of marginal lands and,

the introduction of climate risk insurance through adaptation strategies. These efforts strongly support the challenges and struggles of communities in areas of the world vulnerable to food security, principally Sub-Saharan Africa, which is home to a large diversity of ecosystem resources that together, constitute important natural capital for the region.

INTERNATIONAL WATERS

GEF grants allow WBG client countries to design projects that address issues surrounding water pollution mitigation and capacity building and cooperation across river basins, aquifers, and seas. Projects address organic and chemical land-based pollution entering both freshwater and marine waterways and aquatic systems from agricultural, unsustainable intensive livestock production, municipal, and industrial wastewater.

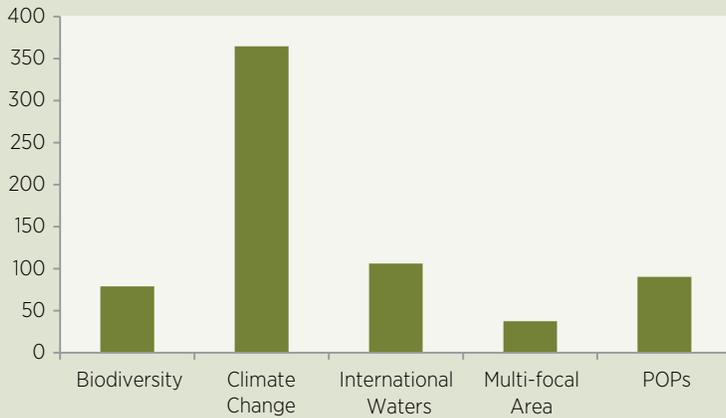
PERSISTENT ORGANIC POLLUTANTS

WBG-GEF Program clients also access GEF funding to eliminate persistent organic pollutants (POPs) by targeting the phase out of production and use of toxic chemicals, demonstrating safe chemical destruction techniques, promoting safe chemical use and handling, and introducing emission control technologies to capture toxic gases.

The WBG-GEF Program has worked across all these areas of intervention over the GEF-5 period to encourage the uptake of ambitious, yet practical approaches to important environmental problems, as demonstrated by the portfolio results achieved and the innovative project designs approved. This quadrennial report showcases a selection of these projects across the WBG's regions, highlighting the value of the WBG's work in mainstreaming approaches for global environmental benefits.



East Asia and Pacific Region:
GEF-5 Distribution by Focal Area (US\$m)



EAP Portfolio Highlights

- Programming of \$677.5 million
- Activities underway in 12 countries, as well as 5 at either regional or sub-regional levels
 - » 46 active projects (1 implemented by IFC)
 - » 31 projects closed during the period (3 implemented by IFC)
 - » 10 new projects under preparation

East Asia and the Pacific

SCALING-UP RENEWABLE ENERGY IN CHINA

GEF grants have helped China grow global markets for wind and renewables by building significant renewable energy (RE) installed capacity including, wind, small hydro, solar water heating and biomass. The first phase of the *China Renewable Energy Scale-Up Program (CRESP)*, in which a \$40.22 million GEF grant complemented a \$159 million WBG loan, supported the formulation of a RE feed-in tariff policy which in turn, triggered important investments by the government that underpinned the development of two wind farms, a biomass power plant, and a portfolio of small hydropower projects.

The second phase of the Program (CRESP II) is working to move RE growth in China from initial to sustainable growth scale-up through the development and implementation of RE legislation and policies that support: cost reductions; efficiency enhancements, through the strategic and optimal deployment of key technologies for existing grid-connected systems and new RE technologies, such as off-shore wind; and, smooth grid integration and access. New ideas related to RE scale-up and the optimization of wind within Inner Mongolia's power system, and RE distributed generation in a selection of the country's New Energy Cities will be explored and piloted.

SUPPORTING CHINA'S GOALS TO BUILD CLIMATE SMART CITIES

The Government of China has pledged to reduce the carbon intensity of its economy by 40–45 percent from 2005 to 2020. Cities, which account for 85 percent of China's commercial energy use, are at the core of the government's action plan to achieve its carbon intensity reduction target. Over the past three decades, China's rapid economic growth has been manifested by the rise of cities, with its share of official urban population reaching the 50 percent milestone in 2011; current projections show over two-thirds of the population, nearly 70 percent will live in an urban setting by 2030. While the country's burgeoning cities give citizens access to modern amenities and expanded living space, these urban areas come with high environmental and lifestyle costs: a high-carbon footprint that is heavily dependent on motorized transportation.

Located on non-arable land and deserted salt pans, the *Sino-Singapore Tianjin Eco-City Project (SSTEC)* is designed to become a model eco-city that promotes energy efficient and low carbon urban systems, replicable in other Chinese municipalities. The eco-city design calls for high population density, transit oriented development, a mixed land use plan, an explicit local working/living ratio and affordable housing.



The project is work-ing towards the achievement, by 2020, of a set of ambitious key performance indicators (KPIs) that include a 100 percent green building and a 90 percent green trips target, a renewable energy use objective of 20 percent, an overall solid waste recycling rate of 60 percent and carbon emissions per unit of GDP at ≤ 150 tons C per one million \$ GDP. Preliminary estimates indicate that if the SSTECS is successful in

implementing this comprehensive plan and achieving its KPIs, the city could save about 393,000 tCO₂ per year.

In Shanghai, the *Green Energy Schemes for a Low-Carbon City project* supports efforts to design a pilot low-carbon district. Centered in the city's Changning District, work focuses on piloting green energy schemes by retrofitting existing buildings, piloting design and construction of new zero-emission buildings, and supporting a low-carbon energy mix. Green transport, including new business models for electric vehicles and better connections between public transport modes, are also under consideration. Technical assistance and incremental support for near zero-emission buildings is funded by a \$4.3 million GEF grant, while the project's low carbon investments are financed by a \$100 million IBRD loan. The project seeks to transfer international knowledge and best practices through implementation of the most effective, least cost options to reduce carbon emissions, based on application of McKinsey GHG abatement analysis.

The *Urban Scale Building Energy Efficiency and Renewable Energy Project* seeks to reduce CO₂ emissions from buildings in select Chinese cities by promoting low-carbon, adaptive and livable urban forms, increasing energy efficiency in public and commercial buildings, and scaling up commercially viable rooftop solar PV deployment. The project's design has been informed, in part, by the WBG Energy Sector Management Assistance Program (ESMAP) 'Low Carbon City Development in China' study, which offers lessons regarding how urban spatial planning can reduce the overall energy consumption of cities. The project brings together the Ministry of Housing and Urban and Rural

Development (MOHURD) with the municipalities of Beijing and Ningbo, forming the basis of a national dissemination platform from which to promote sustainable urban spatial planning, and encourage the replication of good practices and policies that support accelerating adoption of both energy efficiency (EE) and RE in urban areas.

Coordination among the project teams managing ongoing or planned low-carbon city and building EE projects in China is an integral part of the WBG-GEF Program's work under the WBG's China Sustainable Development portfolio. The Sino-Singapore Tianjin Eco-city, Green Energy Schemes for a Low-Carbon City, Urban-Scale Building Energy Efficiency and Renewable Energy and CRESPII projects all contribute valuable experience regarding energy and resource efficiencies in new development zones of low carbon emission cities, which increases confidence for EE and on-site RE deployment in buildings and supports the application of RE policies and pilot RE applications.

UTILITY-BASED ENERGY EFFICIENCY FINANCE PROGRAM IN CHINA

The *China Utility-Based Energy Efficiency Finance Program (CHUEE)* was designed to provide investment and advisory services to the Chinese EE market to overcome two major barriers of EE and RE projects—perceived market risk and technical risk. Implemented by the WBG's private sector investment arm, the International Finance Corporation (IFC), the project played a key role in helping local financing institutions develop their own EE lending products and business lines, and provided credit enhancement tools and technical assistance to help local banks develop EE and RE financing business. It brought together financial institutions, utility companies, and suppliers of energy efficient equipment to establish new financing models for EE, with a focus on expanding lending to small and medium enterprises. Through public training, green credit and Equator Principle training courses, as well as completion of five industrial and regional EE opportunity studies, CHUEE helped the China Banking Regulatory Commission (CBRC), the Chinese banking sector, other potential investors, and energy service companies (ESCOs) and equipment suppliers to better understand the Chinese national EE market. The \$16.5 million GEF investment in CHUEE helped three national partner banks provide financing to 164 sustainable energy finance projects totaling

\$697 million in loans and leveraged *\$1.41 billion* of additional financing, resulting in a global reduction of 17.82 million tons of CO₂ equivalent per year.

URBAN TRANSPORT DIVERSIFICATION IN HANOI

Vietnam's *Hanoi Urban Transport Project*, in which a GEF grant that supports bus rapid transit (BRT) development complements IDA financing, is working to cement a shift to more environmentally-sustainable modes of transport and urban development planning, lower Hanoi's transport-related greenhouse gas emissions relative to a business-as-usual scenario, and promote repeatable successes. At the outset, GEF funding allowed for south-south experience exchange with successful BRT programs in urban centers in Latin America (see the *Sustainable Transport and Air Quality Projects highlighted in Section 6*). Though the implementation effort has not been without challenges, progress is in evidence with the infrastructure development for an interchange station launched, and the mobilization of a Public Transport Authority that will coordinate operations and management of the BRT, existing bus services, and planned urban rail services, already providing advisory services to the City's agencies. In order to raise awareness regarding the benefits of the forthcoming public transit services, a BRT communications strategy including a mass media campaign is now in progress.

INCREASING ROAD FREIGHT EFFICIENCY

In China, the road freight industry accounts for more than 15% of the country's total fuel consumption with truck fuel efficiency is 30% lower than in OECD countries. The *Guangdong Green Freight Demonstration Project* aims to improve fuel efficiency and reduce emissions of local truck fleets by making fuel-saving technologies more accessible. Participating companies receive training, incentive packages that include price rebates on the purchase of "green" technologies such as improved tires, enhanced aerodynamics, and driver behavior diagnostic systems, as well as performance-based awards to help defer purchase, installation and monitoring costs. GPS-linked monitoring devices installed on each participating truck collect real-time fuel consumption data. Intensive outreach has included training 340 trucking company managers, 1,200 drivers and 85 government officials, development of a knowledge-sharing website that generates traffic from both within

the province and across China, and organization of an international green freight trade fair. The project is building confidence in the performance of proven EE freight transport technologies and accelerating efforts to lessen the environmental impact of truck freight, while moving the nation's freight ever more efficiently.

INDONESIA'S CORAL REEL REHABILITATION AND MANAGEMENT PROGRAM: BUILDING ON SUCCESS

In Indonesia, almost two-thirds of the coral reef ecosystems and small-scale reef fisheries are considered threatened from overfishing, and almost half are in danger specifically from destructive fishing practices. Investments through the WBG-GEF-funded *Coral Reel Rehabilitation and Management Program (COREMAP)*, whose second phase was completed during GEF-5, have helped protect valuable coral reefs and restore depleted fish stocks by establishing community-managed no-take reserves within larger Marine Conservation Areas through participatory planning, establishment of legal mandates, provision of community micro-finance and technical assistance. Specifically, COREMAP II invested in capacity building and established an institutional framework that supported drafting regulations and establishing decentralized administration of coral reefs at the district level, involving 358 villages in Eastern Indonesia. It also helped establish the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI), a partnership with Malaysia, the Philippines, Papua New Guinea, the Solomon Islands, and Timor Leste,



that set a 10-year plan to address the urgent threats facing the region's marine resources.

Building on this success, the *Coral Reef Rehabilitation and Management Program-Coral Triangle Initiative (COREMAP-CTI)* is working to extend the integrated community-based approach to sustainable coastal resources planning and management to coastal districts across western Indonesia, to empower communities and strengthen local governments to manage coral reefs for the multitude of benefits and services they provide, from meeting livelihood and nutritional needs, to building community wealth and protection from climate change impacts. The project is piloting initiatives such as marine spatial planning, community rights-based fisheries, and an ecosystem-based approach to fisheries management. Some 210 village communities in select districts in five provinces — Sikka in East Nusa Tenggara; Selayar and Pangkep in South Sulawesi; Buton and Wakatobi in Southeast Sulawesi; Raja Ampat in West Papua; and Biak in Papua — will take part in COREMAP-CTI. The project will also support 13 Marine Conservation Areas covering approximately 5.7 million hectares, as well as two Fisheries Management Zones.

The Government of Indonesia has also pledged, by the year 2020, to set aside 20 million hectares of marine space for Marine Conservation Area management; so far, 14 million hectares have been demarcated and 5.5 million hectares have been brought under management plans. The COREMAP-CTI project is the principal mechanism to meet this commitment.

HAI BASIN INTEGRATED WATER ENVIRONMENTAL MANAGEMENT

The Hai Basin extends over six Chinese provinces and includes the municipalities of Beijing and Tianjin. It discharges into the Bohai Sea, located in the North West of the Yellow Sea, a zone of diverse marine life and an important fishery resource for China, Japan and North and South Korea. Over-exploitation and pollution of groundwater and surface water led to the decline and deterioration of water resources and damaged the freshwater and coastal environments of the Basin. Heavy land-based pollution from urban, industrial, agricultural, and other sources in the Basin, combined with overfishing and reduced freshwater inflows, threatened to have adverse impact on the water quality of the Bohai Sea.

The *Hai Basin Integrated Water and Environment Management Project* initiated vertical and horizontal cooperation for integrated water and environment management planning at the basin, sub-basin and county level so as to catalyze an integrated approach to water resource management and pollution control in the Hai Basin to improve the Bohai Sea environment. Complementarity with the Second Tianjin Urban Development and Environment Project (TUDEP2), a \$150 million IBRD-financed initiative, whose objectives included enhancing the efficiency and equity of Tianjin's urban wastewater management, served to reinforce sustainability of efforts

An evapotranspiration (ET) management approach, which targets real water savings to eliminate groundwater overdraft, thereby providing more surface water for ecological purposes and as outflow to the Bohai Sea, was adopted, and remote sensing and geographic information system (GIS) techniques were used to develop Basin-level ET reduction plans. At project completion, the total amount of over-exploited shallow groundwater used for agricultural irrigation was reduced by 63.2 percent and deep groundwater exploitation was down by 46 percent. Annual wastewater discharge was 129.34 million tons less than at project design, 6.26 million m³ of key pollutants in the Basin's Dagou Canal had been cleared and new wastewater treatment facilities were erected and functioning in Tianjin. More than 400 water users associations were established so that communities were empowered to make their own choices on appropriate water resource management approaches, particularly with respect to water savings and operation and maintenance of on-farm water systems. All told, more than 20 million residents living in the project area benefited from reduced water pollution thanks to elimination of odors and enhanced aesthetic and recreational conditions. And, in the longer-term, benefits that will accrue to fishers and coastal inhabitants of the Bohai Sea through restoration and protection of the marine environment include improved water quality, fishery stocks and biodiversity.

NINGBO WATER AND ENVIRONMENT PROJECT

Located on China's east coast in Zhejiang Province, the port city of Ningbo faced a two dimensional water crisis: 1) poor water quality, due to water drawn primarily from highly polluted local rivers and the use of outdated treatment technology; and, 2) frequent

water shortages due to reliance on local rivers and lack of storage reservoirs. Both problems served to impede economic growth and endanger public health. Very similar problems also faced Cixi City, a city of 1 million located to Ningbo's north on the Hangzhou Bay.



The *China GEF Ningbo Water and Environment Project* was financed under the auspices of the WB-GEF *Partnership Investment Fund for Pollution Reduction in the Large Marine Ecosystems of East Asia* (the Fund), which was established to help East Asian countries adopt a more coordinated regional approach to tackling issues critical to land-based pollution reduction. Conceived as complementary to an IBRD-financed Ningbo Water and Environment Project loan, the GEF grant funding sought to introduce ecological enhancements to the broader efforts that targeted facilitating the expansion and quality of water and wastewater services in Cixi City in an economically efficient and environmentally sustainable manner.

The project introduced constructed wetland treatment, an innovative technology that provides advanced handling of effluents from conventional wastewater treatment plants to reduce land-based pollution. The treatment systems consists of shallow ponds or channels planted with aquatic plants that rely on microbial, biological, physical and chemical processes to treat water. The GEF-financed operation supported a constructed wetland designed to provide tertiary treatment for the North Cixi wastewater treatment plant, restored natural wetlands in Hangzhou Bay and established an educational and research center for wetland management.



Today, nearly 90 percent of Ningbo's population of 2.5 million enjoys high quality water, up from 23 percent in 2006. Following project completion, the Government began construction of new water distribution systems to service five additional townships. Cixi City boosted its wastewater treatment capacity/coverage, resulting in significant reductions in pollution loads discharged to the Hangzhou Bay, and the constructed wetlands associated with the waste-water plants now greatly enhance final effluent quality, demonstrating the feasibility of using such a cost effective approach for tertiary treatment.

Municipal leaders from around China have visited the site to learn from this experience and have begun adopting the approach in new projects. The project also restored freshwater wetlands in a 330 hectare area on reclaimed coastal land in Cixi, creating a variety of wetland habitats the support local biodiversity. The Cixi wetlands, today a National Wetlands Park that attracts large numbers of bird watchers and tourists, would likely have degraded in the absence of the project's intervention.

With that established success, the WBG approved another loan of \$50 million to support the Ningbo New Countryside Development Project that extends wastewater management to an additional 150 villages, and is working to enhance the water supply networks and wastewater collection and treatment facilities in Chunhu Town of Fenghua City in the municipality of Ningbo.

VIETNAM COASTAL CITIES

Vietnam's Coastal Cities project, also financed under the WB-GEF *Partnership Investment Fund for Pollution Reduction in the Large Marine Ecosystems of East Asia*, is piloting the promotion and replication of a new, highly efficient wastewater treatment technology that will contribute to improving the health and habitat conditions of globally significant marine and coastal ecosystems along the country's coastline. The project is associated with the IDA-financed Coastal Cities Environmental Sanitation Project (CCESP), which is financing the construction of drains, sewers and several wastewater treatment plants in the core urban areas of Quy Nhon in Binh Dinh Province.

- 12 The GEF-funded activity is piloting construction of an innovative waste water treatment technology - Chemically Enhanced Primary Treatment (CEPT) — to reduce the discharge of household liquid wastes from Quy Nhon into the Ha Thanh river and Thi Nai marine lagoon. The CEPT plant, whose capacity will be 7,000 m³/day, will provide secondary treatment using trickling filters. It will serve in the order of 60,000 people. The new technology introduces higher efficiency in the removal of BOD and nutrients (N and P) from wastewater, while reducing the space requirement and associated investment costs for traditional secondary treatment. Accumulated sludge will be dried and composted in situ every three years. The project is considered to have high replication value both with respect to applicability of the technology within the Vietnamese context, and to the potential transfer of this wastewater treatment technology in the country's other cities.

CHINA TERMITE CONTROL DEMONSTRATION

For years, the Government of China enacted termite control strategies to protect the country's forest plantations and critical urban infrastructure from the more than 450 species of termites found in the country. Chlordane and mirex, two chemicals classified as persistent organic pollutants (POPs) under the

Stockholm Convention on POPs due to their carcinogenic, neurological, and physiological effects on human health, were long the weapon of choice for the Chinese termite control industry, given their effectiveness and low cost. The *Demonstration of Alternatives to Chlordane and Mirex in Termite Control project* was the response to growing concerns regarding the health and environmental impact of these chemicals. Through the introduction of integrated pest management (IPM) approaches, chlordane and mirex use in the provinces of Anhui, Hunan and Jiangsu were successfully eliminated. Over 5,000 managers and technicians were trained on IPM concepts and practices, and the project supported the design of a national replication program for the complete national phase-out of chlordane and mirex to support the ban on production, consumption, use, import and export of the chemicals, announced in May 2009.

CHINA PCB MANAGEMENT & DISPOSAL

In the 1980s, growing health and environmental concerns surrounding the use of polychlorinated biphenyls (PCBs), compounded by a number of severe PCB contamination events in China's Zhejiang Province saw PCB use fall under ever more stringent regulation, resulting in the bulk of PCB-containing capacitors used in electrical equipment being removed from service and housed in temporary underground storage facilities.

Following its ratification of the Stockholm Convention on POPs, China sought to completely eliminate the use of PCBs and adopt environmentally sound PCB waste management practices within an ambitious two-decade timeframe. The WBG-GEF Program *PCB Management and Disposal Project* adopted a demonstration approach in order to determine and demonstrate the most cost-effective PCB management and disposal practices and technologies with which to design and cost a full scale replicable nation-wide PCB management program. Zhejiang Province was selected as the demonstration province based on its overall transformer capacity data.

The project supported the remediation of all the sites in Zhejiang province confirmed as contaminated, save a handful of PCB burial sites whose location precluded access. These will continue to be monitored by provincial authorities. To date, over 11,000 tons of highly- and low-contaminated PCB wastes and soils have been collected. Highly contaminated wastes were transported and destroyed at the Shenyang

Incineration Facility, which the project had brought in line with Convention standards, and wastes evaluated to be of low contamination were treated using thermal desorption (TDU) at a project supported specialized facility. An impressive suite of guidelines, regulations and policies were prepared covering all facets of PCB management and clean-up including, for example, risk-based system for PCB management and disposal, identification and labeling, temporary storage, long-distance transport, incineration, environmental monitoring, TDU treatment, and emergency response. Project results informed the design of the Government's current 12th 5-year POPs management plan and scale-up activities based on project experience and results were carried out in 12 other provinces by the time of project completion.

PHILIPPINES MINDANAO RURAL DEVELOPMENT PROJECT, PHASE II

The marine and coastal zones of Mindanao, the Philippines' second largest southernmost island, consist of various tropical ecosystems that harbor extensive and globally-significant biodiversity including: coral reefs, sea grass beds, mangroves, sand beaches and dunes, headlands, wetlands, estuaries and lagoons, as well as whale sharks, sperm, humpback, and melon-headed whales, marine turtles, manta rays and giant clams. This rich biological diversity underpins the livelihoods of Mindanao's population, where fisheries, forestry and tourism account for one-third of the province's GDP.

Over time, a range of socio-economic factors increasingly applied pressure to Mindanao's coastal and marine environment, resulting in serious environmental degradation and loss of critical habitat and threatening the region's ecosystem integrity and economic productivity. A GEF-funded *Natural Resource Management Project (NRMP)* project was designed to be associated with the second phase of a larger, IDA-funded Mindanao Rural Development Project. Both projects work toward the higher objectives of improving livelihood opportunities and incomes, and enhancing food security by supporting a government supported decentralized system for agriculture and fisheries that promotes participation, transparency and accountability. The GEF-funded components focus on specific conservation-related objectives includes improving the management of existing marine protected areas (MPAs) and increasing their area through establishment of fish sanctuaries and other categories of protected areas,

as well as no-take zones. An integrated ecosystem management approach is being applied to improve protection of watersheds and water sources, prevent soil erosion and stabilize forestry and cropping systems through measures such as stream bank stabilization. Successful sustainable forest management practices under implementation in other areas of the Philippines are being replicated to restore and protect the integrity of forest ecosystems in the wider landscape, as well as help mitigate climate change by increasing the above ground carbon storage. The project is also mainstreaming biodiversity considerations into policy, planning and regulatory frameworks at local and provincial levels, and reinforcing capacity for sustainable conservation, enhanced long-term fisheries management, and protection of the coast against natural disasters.

LAOS PEOPLE'S DEMOCRATIC REPUBLIC MEKONG PROTECTED AREA AND WILDLIFE PROJECT

In Laos PDR, natural habitats provide myriad services that enrich and sustain human life with both tangible and intangible economic and social value including, clean air, exploitable water, watershed protection, biological control of pests, and crop pollination. Yet a lack of investment in the natural resource base that fuels the country's economic growth has contributed to the unsustainable degradation of natural ecosystems. In turn infrastructure and public health are jeopardized due to declining water availability and quality, increasing probability of flooding, soil fertility loss, increasing spread of diseases, and alienation of economic opportunities such as nature tourism.

Today many Lao citizens rely on natural resources for their livelihoods. This is especially relevant for ethnic and rural communities where the overwhelming majority of the population is poor and depends on natural resources for food security and income opportunities. The GEF-funded *Mekong Protected Area and Wildlife Project*, which is blended with IDA resources, will work to turn this tide by creating wildlife and protected area (PA) enforcement standards, developing good practice applications, and growing successful schemes for PA management and reductions in the trade of illegal wildlife. The Project will build on bilateral initiatives to control and sustain illegal wildlife trade, while strengthening Lao PDR's capacity to collaborate more broadly with regional centers of knowledge and with international organizations involved in addressing wildlife trafficking.

BUILDING RESILIENCE IN KIRIBATI — ADAPTATION PROGRAM, PHASES II & III

Kiribati consists of three, predominantly low-lying, coral island groups with total land area of 811 sq. km scattered over 3.5 million sq. km of sea in the central Pacific Ocean. The country's ability to respond to climate risks is hampered by its socio-economic situation and geography. Kiribati has experienced accelerated coastal development, its population density is high, and the growing costs of providing basic services render the country especially vulnerable to external shocks, including the adverse impacts of climate change. In tandem, sea-level rise and exacerbated natural disasters such as drought and weather fluctuations pose significant and direct additional threats to sectors and resources central to the island nation's human and economic development.

The *Kiribati Adaptation Program (KAP)* designed by the World Bank, with support from the Government of Japan, was launched as a key component of the government's development strategy as part of a broad three-phase ten-year program, that spans awareness raising, the integration of climate risk in government policies and programs, and the implementation of adaptation measures in critical sectors. This has laid the groundwork for the development of Kiribati's National Adaptation Programme of Action (NAPA). The *Kiribati Adaptation Project II (KAP-II)*, a follow-on GEF-funded pilot/demonstration project, helped undertake a systematic diagnosis of climate-related problems and initiated design of cost-effective adaptation measures, including building integration of climate risk awareness and responsiveness into economic and operational planning.

The program's third phase, *KAP III*, is currently under implementation with a grant from the Least Developed Countries Fund (LDCF), bilateral support from the governments of Australia and Japan, as well as financing from the Bank's Global Fund for Disaster Reduction and Recovery (GFDRR). This phase is working to improve the country's resilience to climate change impacts on freshwater supply and coastal infrastructure. It reinforces best practices in the design and implementation of adaptation measures in water and civil works to improve water resource use and management, and emphasizing community consultation and participation in the process. Scaling up on measures from previous phases, KAP III is building resilience by: improving water use and management by installing groundwater and roof rainwater harvesting systems that ensure cleaner, safer drinking

water, including during droughts; reducing leakage and waste from existing water systems; protecting reserves; and, improving long-term planning for local-level water management. The project is also working to protect against coastal erosion by investing in seawalls and mangrove planting at priority sites. It is further strengthening government and community capacity to manage the effects of climate change and natural hazards by supporting the development and adoption of a national Coastal Management Policy and locally-managed Adaptation Plans, as well as supporting the government in managing, monitoring and evaluating the KAP results.

VANUATU: INCREASING RESILIENCE TO CLIMATE CHANGE AND NATURAL HAZARDS PROJECT

Vanuatu, which experiences a high frequency of natural disaster events, such as cyclones, flooding, earthquakes and tsunamis, is another country highly vulnerable to climate change. With changing climate come more extreme weather patterns, which are likely to exacerbate the effects of natural disasters, engender sea level rise, and interfere with agricultural productivity and water availability. The *Increasing Resilience to Climate Change and Natural Hazards Project*, funded by the LDCF with support provided under the GFDRR, will work to increase the resilience of communities in Vanuatu to the impacts of climate variability, change and natural hazards on their livelihoods and food and water security. The project will be implemented in concert with a Mainstreaming Disaster Risk Reduction Project, funded by the Government of Japan, that aims to reduce the impacts from natural disasters and climate change through the introduction of measures to increase community-level resilience to extreme weather conditions and the development of effective warning and response systems.





Disaster risk management efforts spear-headed by the projects will benefit up to 6,000 residents across 35 communities, and will help a target group of 10,000 farmers increase the climate resilience of their agricultural production. In tandem, the installation of 300 rainwater catchment and storage systems will deliver safer drinking water to 120 rural communities. A tsunami warning system will be installed in Port Vila and Luganville, and national hazard response systems will also be strengthened.

COMMUNITY RESILIENCE TO CLIMATE CHANGE AND DISASTER RISK IN THE SOLOMON ISLANDS

The Solomon Islands also faces high economic risk exposure due to geological, hydrological and climatic hazards. Modeling from the Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI) has suggested that natural hazards and climate change are likely to impose an average direct loss of over \$20 million per year on the country, equivalent to 3% of GDP, and strongly affect the population's well-being

in terms of health, environmental sustainability, gender equality, livelihoods and access to education.

The *Community Resilience to Climate Change and Disaster Risk in Solomon Islands Project (CRISP)* is a new project that will help rural communities in the Solomon Islands mitigate and manage the risks of natural hazards and climate change by strengthening climate and disaster risk information and early warning systems, support direct community investments in climate change adaptation and disaster risk reduction, and help integrate climate change adaptation and disaster risk reduction considerations in government policies and operations. Efforts will focus primarily on the rural areas in up to four provinces, benefiting approximately 79,000 people over the course of the project's implementation. The project, which complements an existing Increasing Resilience to Climate Change and Natural Hazards project funded under the Pacific Human Resource Development (PHRD) Trust Fund, a partnership between the Government of Japan and the World Bank Group, is funded provided under the LDCF, with additional financing provided by the GFDRR.





Leveraging Interest and Scaling-up Innovation

One common feature among many of the projects in the WBG-GEF portfolio is the critical role that GEF grant resources, often comparatively small-scale, have played in enabling the testing of novel approaches that would not have happened otherwise with less concessional funding.

A second prominent feature is the success and impact of these projects in leveraging additional or follow-on investments. The WBG's Independent Evaluation Group (IEG) Global Program Review (GPR) on the WBG's partnership with the GEF (2013) captured the mutual relevance that infuses the relationship as follows: "The Bank considers the GEF as a crucial contributor to innovative and risk-sharing approaches, and the GEF perceives the Bank as having a key comparative advantage in leveraging GEF funding to generate global environmental benefits in large projects." (IEG, 2013)

Over the past 2 decades, the WBG-GEF Program has channeled \$4.8 billion in GEF grants to client countries that have mobilized additional funding of \$33 billion. A key aspect of the WBG-GEF Program's approach lies in the ability of the WBG to work with GEF grants through an in-depth and tailored investment framework that promotes synergies and builds capacity to sustain a solid framework for other financing partners to help scale-up work on global environment challenges, ultimately generating significant economies of scale. Since the WBG-GEF Program's inception, over 40% of WBG-GEF projects have been explicitly combined with WBG finance for higher impact, and many of those which were not combined at the outset or during the GEF project lifetime lead directly to follow-on, larger scale investments. Indeed, key to the Program's value proposition is its access to WBG in-house resources, such as staff technical expertise and institutional convening power which help 'crowd-in' a diverse range of partners including, collaboration with the private sector, civil society

Over the past 2 decades, the WBG-GEF Program has channeled \$4.8 billion in GEF grants to client countries that have mobilized additional funding of \$33 billion.

and development partners, as well as demonstrated in-house efficiencies from collaboration with other WBG-managed global partnership programs which help reduce fragmentation of aid and better deliver integrated solutions to client countries.

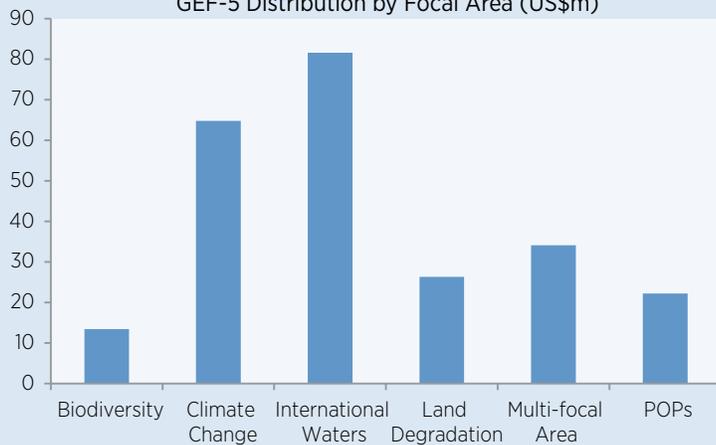
The value-added that such an explicit partnership approach generates is rich. It supports provision of sound analytical frameworks upon which project concepts are built, validates the use of appropriate approaches and technologies, provides just-in-time

expert advice and services, and mobilizes scale-up or second generation projects to make the most of shared agendas for sustainable production and development. During GEF-5, WBG-managed activities that benefited from GEF funding worked with the following partners to expand access to knowledge and financing: the Clean Technology Fund (CTF) and the Pilot Program for Climate Resilience (PPCR) of the Climate Investment Funds (CIF); the WBG Carbon Funds; the Global Facility for Disaster Reduction and Recovery (GFDRR), which helps developing countries reduce their vulnerability to natural hazards and adapt to climate change; the Energy Sector Management Assistance Program (ESMAP), which assists low- and middle-income countries to increase know-how and institutional capacity to achieve environmentally sustainable energy solutions for poverty reduction and economic growth; the Water Partnership Program (WPP), which works at the nexus of water with food, energy, environment, and human development needs; the Canada POPs Trust Fund (CPTF); the Pacific Human Resource Development (PHRD) Trust Fund, which finances technical assistance and other grant activities that support WBG investments to develop human resources in developing member countries; and, the Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI), which offers Pacific Island Countries disaster risk modeling and assessment tools, and integrated financial solutions to increase resilience to natural disasters and climate change.





Eastern Europe and Central Asia Region:
GEF-5 Distribution by Focal Area (US\$m)



ECA Portfolio Statistics

- Programming of \$242.4 million
- Activities underway in 16 countries, as well as 5 at sub-regional and regional levels
 - » 18 active projects (3 implemented by IFC)
 - » 20 projects closed during the period (1 implemented by IFC)
 - » 7 new projects under preparation

Eastern Europe and Central Asia

SUSTAINABLE NATURAL RESOURCE DEVELOPMENT IN ALBANIA

More than half of Albania's upland areas land-use is dedicated to forests and pastures, and many Albanians rely on these resources for their livelihoods. Over several generations, socio-economic pressures, unsustainable practices and weak enforcement of laws and regulations led to overuse of natural resources. Relying on wood for fuel, illegal logging, uncontrolled harvesting and overgrazing of forests and pastures, as well as poor forest management has left a legacy of considerable land and forest degradation, compounded by significant soil erosion.

Beginning in the mid-1990s, a number of initiatives were implemented to help reverse this trend. A World Bank IDA credit, complemented by Italian and Swiss funding, supported preparation of a natural resource management strategy that was piloted in 30 communes, and established a participatory planning platform that empowered local communities to participate effectively in land restoration measures by supporting the transfer of user rights and forest and pasture management from Government to the level of the communities. The Albania *Natural Resources Development Project (NRDP)*, supported by a further IDA credit blended with a GEF grant, extended the communal participatory forest and pasture management approach to 251 communes,



including 2,313 villages, in Albania's upland and mountainous erosion-prone lands, covering 576,757 ha of forest and 203,436 ha of pasture. Legislation enacted provided for the transfer of forest and pasture land user-rights to 345 communes used by nearly one million people. A carbon sequestration program on 5,427 hectares, supported by the World Bank's BioCarbon Fund, assisted natural regeneration which was projected to lead to sequestration of CO₂ in the range of 140,000 to 160,000 tons CO₂eq by 2018.

The bulk of donor support to the forest sector to date has concentrated on forests traditionally used by the local communities and which now have been transferred to local governance units. The more remote forests, which remain under the direct management of state forestry authorities, continue however, to be managed on an ad hoc basis and have suffered from a lack of investment and proactive management. None of these areas have adopted valid forest management plans, and unverified reports of unrecorded/unofficial removals abound. An urgent need exists to assess the scale of the unofficial harvest problem and more generally, to improve the management planning and supervision capacity of the country's state forest institutions. A new IBRD, Sweden and GEF-funded *Environmental Services Project* will therefore, scale up successful results to focus on enhancing the financial, economic, and institutional sustainability of land use and natural resources management. It will lend support for sustainable land management practices in targeted project areas, mainly in the erosion prone rural upland areas, while seeking to increase communities' access to monetary and non-monetary benefits through promotion of alternative livelihoods, provision of environmental services and sustainable utilization of wood and pasture products in the long term. The project will also help build the capacity of Albania's farmers, community organizations and government institutions to efficiently access and use EU funding.

SUPPORT FOR THE GEF STRATEGIC PARTNERSHIP ON THE BLACK SEA AND DANUBE BASIN

Under the auspices of the Black Sea and Danube Basin Strategic Partnership, established in 2001 by the riparian countries with the cooperation of the GEF, the WBG, UNDP, UNEP and other financiers, the WBG-GEF Program has implemented the Investment Fund for Nutrient Reduction. To date, the Investment Fund has supported 10 projects in nine

countries to address transboundary water pollution in the region. This is done through country-level investments aimed at reducing nutrient inputs into waterways from agricultural, municipal and industrial wastewater by restoring wetlands, reforming and improving agriculture and land management practices, and by improving wastewater treatment in communities and industries.

The *Romania Agriculture Pollution Control Project* supported the demonstration and piloting of improved manure handling facilities and environmentally friendly agricultural practices in the country's Calarasi region to reduce nutrient discharge into surface and groundwater. New agricultural practices were introduced in a 90,000 hectare catchment area along the Danube to reduce nitrate pollution and improve groundwater quality, and 48 communities were involved in manure management and demonstration of environment friendly agricultural practices. Fourteen (14) village-level manure platforms were constructed, as well as 2,250 household-level manure storage facilities. At completion, the percentage of households in the project area with livestock that were using village manure storage, household bunkers and/or segregating waste materials reached 54.4%, compared to the baseline of 0% at project design. Nutrient discharge into surface and groundwater was reduced by about 15% for nitrogen and 27% for phosphorus, and a 34% increase in cropped areas resulted from using environmental practices such as crop rotation. Eighty-four (84) hectares of degraded land were also reforested.



The project's success in enhancing environmental management in rural areas and initiating behavior change in target populations led to scale-up through a follow-on *Integrated Romania Nutrient Pollution Control Project*, with IBRD and GEF Funds, which is currently under implementation. Best practices, farmer training, and awareness-raising applied in the Calarasi region are now being replicated through demonstration in all the country's nitrate vulnerable zones.

In Bulgaria, the *Wetlands Restoration and Pollution Reduction Project* worked to reverse the loss of over 80 percent of the country's floodplains and wetlands, and reduce nutrient loads in the Danube and Black Sea by changing agricultural practices to better address pollution from fertilizers and by restoring floodplain sites. Wetland restoration was piloted on 4035 hectares of former marshes in two protected areas (PAs), Persina Nature Park (2,280 ha) and Kalimok Brushlen Protected Site (1,755 ha), doubling the project's initial target, and more than 27,700 hectares of protected areas with globally significant biodiversity habitats were brought under improved management and protection. Permanent professional staff engaged to implement the PA management plans adopted were equipped with boats, vehicles and monitoring equipment, growing PA management capacity from 17% to 90%.

Both now hold the NATURA 2000 designation, linking them with the Europe-wide network of sites focused on preservation of natural heritage. Farmers received assistance in transitioning to environmentally friendly agricultural practices that reduce regional nutrient and pesticide pollution. The project also achieved success in changing the perception of local populations of wetlands from eyesores to ecosystems of natural beauty with value that contribute to economic growth and play a role in climate change mitigation. A small grant program focused on raising awareness about biodiversity conservation, implemented at the two sites and targeted at the young generated 55 projects involving 23 NGOs, about 65 leading experts, in the range of 5,500 students, as well as 250 kindergarten children. All told, these efforts reduced Bulgaria's total land-based nutrient pollution to the Danube/Black Sea by 5%, while protecting unique landscapes and habitats for important bird species, reducing nutrients in outflow waters and restoring critical fish reproduction habitats.

Turkey's *Anatolia Watershed Rehabilitation Project* introduced sustainable land use practices that

reduce the discharge of agricultural nutrients into surface and ground water, while encouraging animal husbandry in 28 micro-catchments. The goal was to counter aggressive use of fertilizers, soil erosion and deforestation, and reduce nutrient inflow draining from four provinces into the Black Sea. Equally important, the project sought to improve the livelihoods of communities affected by natural resource degradation.

At the outset, virtually no farmers in the project's micro-catchments were processing or using manure efficiently, and insufficient measures were in place to reduce nutrient discharge. Manure management systems, consisting of manure platforms and adequate manure storage facilities were constructed, and training in optimum manure application as fertilizer was provided. Training was also conducted in sustainable nutrient management practices and implementation of environmentally friendly agricultural practices such as shrub and tree planting and organic farming. Together, these activities encouraged a significant increase in the percentage of farmers implementing environmentally friendly agricultural practices, and contributed to decreasing nutrient loads entering soil and water bodies from agricultural sources. A significant increase in vegetative cover resulted, and crop productivity, as a proxy for soil fertility, increased, ranging between 30% and 145% depending on the crop variety. An increase in the marketing of organic products was also in evidence, which improved local incomes. Legislation with respect to nitrates pollution was harmonized with the EU Nitrates Directive, and regulatory and institution-level mechanisms were put in place to support water quality monitoring.

SUPPORTING ENVIRONMENTAL LAND MANAGEMENT AND RURAL LIVELIHOODS IN TAJIKISTAN

Ninety (90) percent of Tajikistan is considered upland and mountainous, with more than two thirds of the population rural and dependent on 4.6 million ha of agricultural land, the majority of which is rain-fed pasture. The agricultural sector accounts for 64% of employment, and is generally characterized by low productivity.

Environmental degradation and unsustainable use of natural resources are important constraints and pose significant challenges to the country's development. Tajikistan's predominantly mountainous terrain makes it particularly vulnerable to natural disasters.

Mono-cropping and improper land use practices, such as wasteful irrigation methods and inadequate drainage, are associated with soil degradation and stagnating yields, especially in lowland areas. Pasture degradation, due in part to overgrazing and poor stocking practices is another important threat. In upland areas, the conversion of steep slopes to agricultural production has contributed to land degradation, and chronic energy shortages have increased the burning of organic matter and vegetation that would otherwise be available as fertilizer or ground/tree cover. Climate variability and change are likely to pose additional and significant risks, particularly for those pursuing subsistence agriculture or pastoralism.

It is expected that climate change will have a dramatic impact on Tajikistan's agriculture: crops will be exposed to increasingly low and erratic rainfall coupled with drying up of water resources through increased regional temperatures, reduced snow accumulation in mountain glaciers and an increased frequency of extreme weather events. These changes will lead to impacts such as fluctuations in the hydrological cycle — especially from glacial retreat and flash floods — with downstream consequences nationally and regionally for agro-ecosystems and water resources.

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Transformation of land management practices at the local level is required to allow Tajikistan to better deal with the range of challenges it faces, including those associated with climate variability and change. Widespread adoption of sustainable land and water management strategies and practices for agro-ecosystems will assist farmers and communities in addressing these issues, and adapt, as well as become more resilient, to climate change by improving local livelihoods and food security, and restoring productive natural resources. Furthermore, improved technologies and management practices can specifically enable farmers to adapt to climate variability and change, address increasing periods of drought, and combat climate change by sequestering carbon, particularly in soils.

The Tajikistan *Environmental Land Management and Rural Livelihoods Project*, funded by a GEF grant and financing under the Pilot Program for Climate Resilience (PPCR) of the Climate Investment Funds (CIF), seeks to enable the country's rural population to increase their productive assets in ways that improve natural resource management and resilience to climate change. The project is working with some 21,000 rural households, representing approximately

126,000 persons, of whom at least 40% are female, on selected project sites. Investments underway to support rural production and land resource management include: promoting sustainable village-based initiative rural production through provision of small-scale grants, allocated to 'common interest groups' or groups of households by the villagers themselves, to increase the resilience of rural livelihoods in climate vulnerable districts; introducing sustainable community-managed pasture/fodder-based livestock production systems in up to eight selected areas, as well as sustainable on-farm water management practices in irrigated cropland, primarily in lowland districts; and, investing in knowledge management and exchange, as well as institutional support, to support the sustainability of efforts.

BOSNIA AND HERZEGOVINA SUSTAINABLE FOREST AND LANDSCAPE MANAGEMENT

Relative to the size of the country, the forest resources of Bosnia and Herzegovina (BiH) rank among the richest in Europe in terms of their extent and variety. A recently-completed national forest inventory, funded by an IDA Credit, cites the country's total forest area to be 3.2 million ha and covering approximately 62 percent of total land area, making BiH the most forested country in Europe. Forests are considered one of the country's foremost natural resources, particularly among the rural population (estimated 3.5 million), which considers forests as an important source of employment, energy and recreation. Forests are also a source of non-timber forest products such as, mushrooms, berries and herbs. Substantial job opportunities exist especially for local people through tourism focused on the forest and mountain landscapes as well as hunting. Forests also have important watershed protection values, especially for the middle and lower Danube.

However as a result of illegal logging, ore mining, construction, forest fires and others activities that degrade the forest base, areas under forest cover have been shrinking rapidly. Overall, 17 percent of the forest areas are classified as low, degraded forests, while an additional area of about 6 percent of the forest estate is classified as underutilized pasture land or bare landscapes, where natural regeneration of forest structure could take place, given the right conditions. Improved forest management would allow BiH to take advantage of "use" values from timber and other products to provide sustained income for local

people, while simultaneously protecting its “non-use” beneficial values associated with watershed protection and global ecosystem values.

The *Sustainable Forest and Landscape Management Project* seeks to address these concerns by building the capacity of stakeholders in BiH’s forestry sector to demonstrate approaches for integrated sustainable forest and land management (SFLM) of vulnerable forest, scrub and pasture landscapes. One project stream will tackle enhanced planning and monitoring for SFLM. Forest certification support will work to improve the sustainability of forest management through community-level engagement for adoption of certifiable standards in regions of the country that have not yet had the resources or capacity to advance in this important area. Preparation of a model forest roads master plan will help identify the most urgent forest road rehabilitation projects required to improve environmental and economic performance. An existing Forest Management Information System (FMIS) will receive enhancements to allow it to be of greatest relevance for decision-making, specifically through introduction of select climate change information such as carbon stock accounting for mitigation efforts and systems to monitor incidence of losses related to fires and pests.

The project will also demonstrate, with a view to broad-scale replication, SFLM techniques in vulnerable areas through afforestation based on assisted

natural regeneration and stand rehabilitation and multi-purpose forestry demonstration techniques that involve integrated management for vulnerable forest, scrub and unutilized pastures. In order to address fire management concerns, a demonstration sub-component will engage and train local communities in implementing appropriate small-scale fire management interventions.

SOUTH EASTERN EUROPE REGION: NERETVA/TREBISNJICA RIVER BASIN

The Neretva and Trebisnjica River Basin (NTRB) is a transboundary basin between Bosnia and Herzegovina (BiH) and Croatia that covers approximately 10,000 square kilometers within the Adriatic watershed. The valley and delta of the lower Neretva River contain the largest and most valuable remnants of the natural Mediterranean wetlands on the Eastern Adriatic coast, as recognized by the area’s Ramsar Wetlands site designation. The NTRB water resources, and the ecosystems dependent upon them, play an important part in the economies of both countries and in the livelihoods of over 430,000 people. The wetlands serve functions important to water resource management including purification, nutrient reduction, sedimentation sink, flood management, and prevention of shoreline erosion, as well as provide critical habitats, and the rivers are crucial for transport,



recreation and fishing, not to mention drinking water, irrigation, and energy production.

Lax industrial and municipal wastewater management and treatment, deteriorating agricultural practices, inadequate river regulation and protection of sensitive areas, and weak cooperation among stakeholders on addressing competing, sometimes conflicting, needs for water from the basin led to degradation and loss of wetlands and their associated habitats and biodiversity, which in turn resulted in salt intrusion, particularly in the Neretva Delta, and erosion of riverbeds and land. Coordination with respect to infrastructure operation governing hydroelectric power plants and accompanying reservoirs on the Neretva and Trebisnjica was needed in order to prevent further negative effects on the basin and its ecosystem activities.

The *Neretva and Trebisnjica Management Project* was the first project to receive financing under the WBG-GEF Investment Fund for the Mediterranean Sea Large Marine Ecosystem (LME) Partnership. Building on the model established by the GEF Strategic Partnership for the Black Sea and Danube basins, the Investment Fund primarily financed investments that support pollution reduction and other conservation targets agreed by the basin countries under the Strategic Action Program to Address Pollution from Land-Based Activities in the Mediterranean Region (SAP MED).

The project provides mechanisms for the efficient and equitable allocation of water amongst the users of the NTRB in South Eastern Europe and Balkans at the trans-boundary level, and enhances basin ecosystems and biodiversity through improved water resources management. BiH and Croatia have actively cooperated in the project's implementation and have established result joint bilateral meetings. A river basin management plan (RBMP), informed by studies on minimum environmental flows and optimization for hydropower reservoirs, is being drafted. Water resource management capacity associated with basin-wide measurements, monitoring, modeling, and data management in both countries has been strengthened and integrated into existing institutional, technical, and regulatory transboundary mechanisms.

Water infrastructure improvements have been introduced in both countries through rehabilitation of small-scale water management infrastructures such as weirs and irrigation structures, and wetlands

management has been strengthened through, for example, introduction of a scheme to contain salt water intrusion into Croatia's Neretva Delta. A number of high-priority investments in water pollution control have also been undertaken in conjunction with IAD finance focused on the introduction of low-cost, sustainable wastewater collection and treatment technology and infrastructure for both municipal and industrial uses.

Civil society and the scientific community have been actively engaged in the water resource management decision-making process, as well as in the implementation of project activities such as, the establishment of a small grant program as an incentive mechanism to encourage responsible, local level management of resources. A website has been developed, and the project has actively participated in the GEF's IW LEARN knowledge-sharing events.

SUPPORTING RESILIENCE: CATASTROPHE RISK INSURANCE FOR SOUTHEAST EUROPE AND CAUCASUS

The countries of South East Europe and the Caucasus (SEEC), the bulk of which are located within trans-boundary river basins, are highly vulnerable to natural hazards, principally flooding. With climate change, the frequency and severity of natural disasters, particularly those of hydro-meteorological origin, are seen to be rising in all SEEC countries. Natural disasters exact severe human, physical and economic losses to both governments and populations. Globally, economic losses from climate-related and geological perils have been rising, averaging \$100 billion/annum over the past decade; in the first half of 2010 alone, economic losses caused by natural disasters totaled \$72 billion.

Yet, the availability of catastrophe insurance and weather-risk coverage for homeowners, farmers and small- and medium-size enterprises (SMEs) is currently virtually non-existent in the SEEC. In order to shift the balance and increase the number of insured in the SEEC against weather related risks, the WBG, building on more than a decade of global experience in designing national and regional catastrophe and weather-risk insurance programs, is partnering with the Regional Cooperation Council for South Eastern Europe (RCC) and the United Nations International Strategy for Disaster Reduction (UNISDR) to establish the *South East Europe and Caucasus Catastrophe Risk Insurance Facility (SEEC CRIF)*. SEEC CRIF will

promote the development of local catastrophe and weather-risk insurance markets in Albania, Macedonia and Serbia so as to enable local businesses and populations to buy affordable catastrophe and weather-risk insurance products, currently unavailable in the commercial market.

The SEEC CRIF is funded using a grant under the Special Climate Change Fund (SCCF), which complements IBRD and IDA resources, as well as financing under the GFDRR. The project's global environmental objective is to reduce the economic vulnerability brought about by the adverse impact of climate change on homeowners, farmers, the enterprise sector, and government agencies by expanding their access to financial protection and transfer catastrophe and weather risk to the private sector in order to stem economic vulnerability at the local and national levels and create a more climate resilient country. SEEC CRIF will incorporate long-term climate change adaptation planning as part of its insurance products. By revealing the true cost of risk through actuarial pricing and by incorporating incentives to mitigate against weather events, the program's catastrophe and weather-risk insurance products will contribute to more informed and less risky consumer and production decisions, choices and behaviors.

SEEC CRIF promotes cross-cutting and collaborative activities, founded on the engagement of major stakeholders. At the technical level, efforts will focus on establishing systems to collect and synthesize weather data. Stakeholders will be involved in order to build the requisite knowledge and skills needed to understand weather risk and help their countries adapt to the impacts of climate change. Public awareness information campaigns, as well as non-binding regulatory mechanisms are also projected to increase demand for catastrophe and weather-risk insurance products amongst the general public.

BELARUS POPS STOCKPILES MANAGEMENT

Belarus has adopted a coordinated approach to its Stockholm Convention obligations. The GEF-funded *Integrated Solid Waste Management Project* combined a World Bank loan targeted at increasing the environmental benefits of integrated solid waste management, with a GEF grant whose objective was to strengthen national capacity to manage hazardous wastes and encourage sound POPs stockpile management. The focus of the POPs component was three-fold: destruction of high-priority POPs

stockpiles of DDT and concentrated PCBs, as well as associated contaminated equipment; construction of secure storage for lower-risk stockpiles such as, contaminated soils, equipment and mixed organic pollutants; and, provision of technical support for capacity development and institutional and regulatory strengthening to support integration of POPs considerations into existing national health monitoring and environmental information systems, as well as to help define a long-term program to eliminate unintentional POPs releases in future. Work has proceeded on two fronts.

With the support of the project, Belarus' 14 biggest, priority PCB hot spots were cleaned, resulting in 823 tons of PCB wastes being removed and transported abroad for destruction. This project component provided key awareness-raising and instituted improved enterprise-level resource planning for ongoing PCB phase out and disposal.

The project also tackled the challenge involving the Slonim Landfill, a forty-year old burial site containing



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hundreds of tons of pesticides, including significant quantities of the once popular agricultural pesticide DDT that had been collected at the site. The proximity of the site to the town of Slonim (population 50,000) and its surrounding villages was of growing concern to the government, particularly when analysis showed that small amounts of pesticides had leached from the burial site to underground waters and risked polluting groundwater, as well as well water and nearby rivers.

By project completion, 950 tons of soils contaminated with obsolete pesticides were excavated, packed and shipped abroad for disposal at a specialized facility, with an additional 750 tons extracted, repackaged and transferred to secure storage awaiting environmentally sound destruction.

MOLDOVA POPs STOCKPILES MANAGEMENT

In the early 1990s, Moldova's agricultural sector underwent significant privatization. Over 3,000 tons of obsolete pesticides that had been imported during the 1980s to help spur agricultural production, were abandoned across the country and left exposed to the elements, to be spread by wind and rain. Similarly, in the country's

energy sector, decades of heavy industrialization had led to the accumulation of large amounts of PCB-contaminated oils in electric capacitors and transformers at the approximately 26,000 power installations in the country. Moldova was dotted with pollution hotspots.

The *Moldova POPs Stockpiles Management and Destruction Project*, which received additional financing from the Canada POPs Trust Fund (CPTF) managed by the World Bank, closed in 2010 having succeeded in strengthening national regulatory and institutional arrangements which laid the foundation for the establishment of a modern regulatory system for the management and control of POPs, as well as other toxic chemicals and wastes. The Project successfully engaged stakeholders at all levels of government, in local communities and within civil society through targeted awareness-raising on POPs issues. This in turn increased public demand for the government to institute a modern and safe chemicals management system, including for POPs. A POPs residual areas identification and mapping exercise allowed for 1,604 hot spots, including 1,588 old or abandoned warehouses and pesticide mixing/preparation sites, and 16 PCB contaminated sites, to be identified and organized into a national POPs Pollution Database



using GIS technology. In total, 1,293 tons of POPs containing and contaminated obsolete pesticides and 934 tons of PCB containing capacitors were removed and exported for environmentally sound destruction, and the sites remediated.

POLAND ENERGY EFFICIENCY

At the time of the design of the Poland Energy Efficiency Project, the residential buildings sector was the country's largest energy consumer, accounting for more than one third of final energy consumption. Despite declines in energy intensity over the years, the potential remained to dramatically save energy in residential buildings. Through support for the operation of energy service companies (ESCOs) and partial credit guarantee components, the project designers sought to increase public and private sector investments in energy efficiency (EE) in buildings along three tracks: overcoming the risk barriers in the financial markets that inhibited commercial bank participation in EE project financing; demonstrating the feasibility of packaging higher-cost EE investment in buildings and increasing acceptance of energy performance contracting mechanisms in Poland; and, stimulating demand for EE services in the buildings sector by increasing awareness, as well as the capacity of commercial banks to originate and implement loan transactions for EE investments.

The project's ESCO component was successful in reaching its objectives to facilitate packaged investments

in higher-cost energy efficiency measures in buildings and gain increased acceptance of the ESCO concept nationwide. By 2012, the number of transactions related to EE projects/ESCOs in the Polish market exceeded 28,000; the number of higher cost EE/ ESCO projects (>\$250,000) in the Polish market had increased by a factor of 12; the number of in-country commercial businesses able to provide EE services tripled; and, the total volume of debt financing for EE had increased by more than 14 times within the same timeframe.

The *project did face challenges* due to weak demand influenced by changing market conditions. Although several attempts were made to redirect guarantees associated with the project, the decision was finally taken to restructure this component and align it in support of an existing government initiative, the Thermo-Modernization (TM) Program, which provided subsidies, up to 20%, for commercial EE loans in residential buildings in order to provide a stable and predictable investment environment for residential house owners. The uptake of this grant support was positive and within little time, the funds had been fully disbursed, indicating robust lending activity on the part of partner banks.

A series of studies related to EE barrier removal were also completed, and this analysis revealed that the project leveraged an estimated 30,700 t CO₂ emission reductions per year through increased public and private investments in energy efficiency in buildings.





Helping Drive Behavior Change

Behavior change involves influencing individual behavior, either by internal or external factors or forces. Change in behavior plays a critical role in achieving higher level, sustainable results in many of the sectors in which the WBG is active. While investments and access to information, education and communication are key toward building knowledge and infrastructure that supports sustainable growth, behavior change cements the longer-term sustainability of efforts.

Introduction of a modern and efficient public transit system for example, may not generate its carbon emissions reduction potential if commuters eschew public transit due to a perceived lower social status association, and aspire rather to vehicle ownership. Similarly, rehabilitation of a wetland and development of recreational and educational facilities may not generate the ecotourism traffic projected if the local population's perception of the wetland remains colored by its previous degeneration.

To better understand how to narrow the gap between 'investment and knowledge' and 'behavior change', and how such changes can best be stimulated and sustained to increase developmental impact, a preliminary portfolio review exercise was recently conducted by the WBG. It addressed behavior change across five sustainable development topic

Behavior change is critical to ensure that environmental threats are removed in a sustainable way.

areas: agriculture, energy, environment and natural resources, transportation and water and sanitation. Of the 51 projects that were identified as demonstrating behavior change interventions, 30, or 59% were either fully GEF-funded or projects that included GEF-funding blended with other sources of finance. These projects tended to emphasize civic engagement on a broad scale and used a wide range of media technologies to reach and involve community members, as well as targeted interaction

between clients and stakeholders, such as training. Another common trend lay with the focus toward establishment of enabling conditions, such as development of policies or regulations, infrastructure, or access to finance. Examples drawn for the WBG-GEF Program portfolio included:

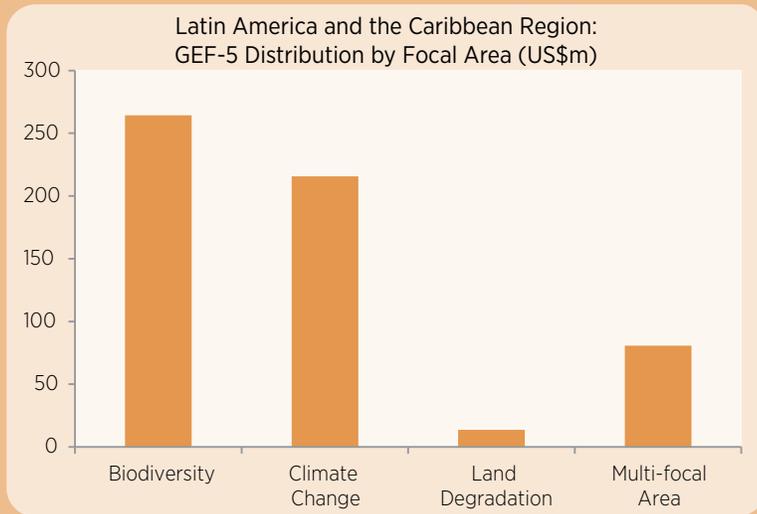
The Indigenous Management of Protected Areas in the Peruvian Amazon Project, which adopted a strongly social, community-level approach to biodiversity conservation was executed using a participatory, bottom-up approach that encouraged responsibility among all stakeholders and inter-cultural dialogue. This allowed the project to take on board existing local capacity and promote community empowerment, as well as establish a social network that supervised and monitored results. Extensive consultation ensured that indigenous perspectives and priorities regarding land and natural resource

uses were incorporated in planning, as well as into the design of conservation strategies that were passed before community general assemblies for approval. Indigenous representatives participated in the five protected area committees established under the project, as well as in the community surveillance groups that were struck to monitor the protect areas network. The response on the part of indigenous peoples' to this approach was very positive: in their own words, they felt treated like equals.

The *India Ecodevelopment Project (IEDP)* promoted village-level eco-development as a means of reducing negative interactions with biodiversity by increasing the collaboration of local populations in conservation measures. This was done by fostering alternative livelihoods and resource uses financed through village eco-development programs that specified measurable actions on the part of local populations to improve conservation. The IEDP helped to free tribal communities and forest fringe villagers, who belong to the poorest sections of society, from moneylenders, greatly increased understanding and cooperation between communities and forestry officers, and improved the income, welfare, and status of local people. Countrywide, the establishment of eco-development committees empowered local villagers, enabling them to access additional resources from local government (panchayat) schemes and to develop self-help groups and literacy programs for women and youth groups.

In Croatia, the *Karst ecosystem Conservation (KEC) project* established community-based mechanisms for biodiversity, conservation, and sustainable resource use in the Karst region, promoted sustainable nature-based tourism, increased local public awareness and support for biodiversity conservation, improved protected area management and services for biodiversity conservation and, demonstrated linkages between rural development and biodiversity conservation through establishment of a Conservation and Rural Revitalization Grants program (CRRG) that financed beekeeping, sheep and goat raising, organic farming, ecotourism, grassland management, restoration of cultural heritage sites, as well as supported various learning programs and websites for biodiversity. The behavior change intervention associated with the project improved beneficiaries' understanding of, and attitudes toward, biodiversity and nature protection by supplying new knowledge and skills. As a result, traditional practices were revitalized by modern concepts of natural resource use such as, the production of wooden shingles and traditional meadow maintenance, both of which are a potential source of income-generation for local households. Such rural revitalization and sustainable nature protection activities generated significant, and sustained, interest among local people. A Croatian beneficiary's analogy for the project's final impact was that "we were not just handed a fish, we received tools and know-how to catch our own fish."





LCR Portfolio Highlights

- Programming of \$574.2 million
- Activities underway in 15 countries, as well as 11 at sub-regional levels
 - » 30 active projects
 - » 29 projects closed during the period
 - » 7 new projects under preparation

LATIN AMERICA AND THE CARIBBEAN

AMAZON REGION PROTECTED AREAS, PHASE 2 (ARPA 2)

Brazil's Legal Amazon Region represents the largest area of intact tropical rainforest in the world. Encompassing around five million square kilometers, it provides essential global environmental benefits including preserving significant levels of unique biological diversity as well as providing carbon stores estimated at 120 billion tons. Despite the region's significant influence as a global climate regulator, it remains threatened by deforestation that has come from increasing settlement that brings expanded agricultural, ranching, logging, and mining operations. This often unchecked development has led to the loss of tropical forest, degradation of watersheds, and overexploitation of wildlife and fisheries.

The latest phase of the WBG-GEF *Amazon Region Protected Areas (ARPA) Program* is addressing deforestation by expanding and consolidating areas under strict protection and increasing the total area under strict supervision to 10 percent of Brazil's Amazon basin, including samples of all 23 Amazonian eco-regions, and catalyzing coordination, management, and monitoring systems to support sustainable development and ecological integrity. The approach includes a web-based administrative management tracking system, a shared account facility that allows resources to flow directly to site

managers, and a "protection plan" requirement to enhance enforcement and strengthen partnerships with environmental law agencies. A nationally-managed endowment fund (FAP), is capitalized and meets performance benchmarks.

The first phase, which closed in 2008, supported designation of 24 million hectares of new protected areas. GEF funding of \$30 million supported the incremental costs of creating new protected areas (PAs), and strengthening management infrastructure and financial and cost recovery mechanisms. Significant additional resources were provided by Germany's Kreditanstalt für Wiederaufbau (KfW), the World Wildlife Fund (WWF), the Government



of Brazil and other donors. Community-level public consultations helped define policies for land occupation and management, and communities receive training in agricultural and extractive techniques to ensure the preservation of natural resources, as well as to prevent and extinguish forest fires. Parks now include conservation units endowed with executive councils made up of representatives from the Brazilian Government, civil society associations, and the local administration, among other stakeholders.

Support for the second phase, launched in early 2012, includes GEF grant funding of US \$15.9 million. Phase 2 seeks to create an additional 13.5 million hectares of protected areas, consolidate 32 million hectares of existing protected areas, and capitalize the endowment fund with a 150 percent increase over current funds. Payments for carbon offsetting in Pas, through the United Nations Collaborative Programme on Reduced Emission from Deforestation and Forest Degradation (REDD), will be directed to state governments and/or to communities in these areas.

ARPA's benefits are immediate and long-lasting; they are local and global. The PAs represent an offset of emissions equivalent to 430 million tons of carbon. Indigenous communities are returning to their way of life, preserving cultures that otherwise would have been lost. Improvements in land use and management allow small family farms and large scale agriculture to co-exist. Service providers, as diverse as eco-tourism agencies and genetic explorations, can expect to benefit from ARPA's results. Lessons learned are being broadly shared with stakeholders throughout the global conservation community. In June 2012, the U.S. Treasury recognized ARPA in its inaugural Development Impact Honors. The Program's success has also led to the initiation of a new WBG-GEF project in Brazil's protected coastal areas and marine waters.

ADAPTATION TO CLIMATE CHANGE IN THE ANDEAN COUNTRIES

Climate change has been linked to the accelerated retreat of tropical glaciers in the Andes and to increased weather variability and extremes affecting the Andean ecosystems. Tropical glaciers play a critical role in regulating water supply to associated watersheds, making runoff from glaciated basins essential for the regional water budget and the integrity of mountain ecosystems. Even during droughts

or the dry season, glaciers assure year-round water flows for agriculture, potable water, hydroelectric power generation, and the stability of extensive mountain biomes. Accelerated glacier retreat is accompanied by the formation of new lakes in the highlands which, in addition to hindering glaciers' ability to regulate water, increase the risk of floods and landslides, ultimately exacerbating water shortages. As changes induced by tropical glacier retreat and reduction alter the sustainability of current patterns of water use and the viability of the ecologies of glaciated basins, they also threaten to impose lasting implications on the region's economic activity and the welfare of local populations. These rapidly deteriorating conditions therefore presented a clear case for the need to put in place adaptation strategies.

Beginning in 2008, the *Adaptation to the Impact of Rapid Glacier Retreat in the Tropical Andes (PRAA) Project* for Andean Countries was implemented in Bolivia, Ecuador and Peru, with some activities undertaken in Colombia, under the administrative management of the General Secretariat of the Andean Community of Nations (SGCA). Peru alone is home to 71% of the world's tropical glaciers. The countries all have 'glacierized basins' from which water generated by melting glaciers contributes significantly to their local and national economies.

The project supported the resilience of local ecosystems and economies to the impacts of glacier retreat by improving understanding of the glacier retreat phenomenon, illustrating the costs and benefits of adaptation activities, and strengthening existing capacities to address the challenge and take action to scale-up broader response in future. Specifically, the project targeted the effective integration of socio-economic-environmental implications of glacier retreat into regional and local planning efforts for





glacier fed basins, it charted and embedded glacier retreat impacts into local sector development projects and, generated data on glacier dynamics. Small-scale risk assessments were conducted to demonstrate the benefits of more automated, water-conscious agriculture, complemented by a training program designed to improve the efficiency of clean water distribution.

The project also has contributed important south-south knowledge exchange by hosting academics and government officials from Afghanistan, China, India and Pakistan, who visited Ecuador in January 2014, to learn about the results and impacts of the regional program. Additional funding from the Government of Japan allowed for the installation of a network of eight glacier monitoring stations situated more than 4,000 meters (13,100 feet) above sea level in the four countries. Working in cooperation with the National Meteorological and Hydrological Service of Peru (SENAMHI), this coordinated network will obtain and consolidate regional information on glacier conditions that will be used to help define more efficient, evolving adaptation strategies in the high Andes.

A follow-on regional initiative involving Bolivia, Colombia, Ecuador and Peru, the *Andes Adaptation to the Impact of Climate Change in Water Resources project*, is currently under preparation building on the results achieved by a

previous WBG-GEF-implemented Integrated National Adaptation Project in Colombia, and regional Rapid Glacier Retreat in the Tropical Andes project. Funding under the SCCF will support an ongoing effort to tackle the challenges that result from the changes to the water cycle being experienced as the Andean tropical glaciers recede. This project offers an important window of opportunity to scale-up work on climate change adaptation in the region along two tracks: 1) by undertaking the challenge to improve integrated water resources management that promotes more efficient use of the resource and takes into account future variability; and 2) by spearheading efforts to generate a new, higher level of engagement for the issue and positively influence national level decision-making, based on the concrete results generated to date.

LARGE-SCALE RENEWABLE ENERGY DEVELOPMENT IN MEXICO: TAPPING SOLAR POWER AND WIND POTENTIAL

Mexico is the ninth largest greenhouse emitter in the world. Its main carbon dioxide emission sources emanate from energy combustion (89 percent) and industrial processes (11 percent). Although Mexico has abundant renewable energy sources, its share of generation capacity based on wind, solar, hydro or geothermal resources has remained small, despite the fact that the country is located, for example, within the world's solar belt where high solar insulations allow for the efficient operation of grid-connected solar-based power generation.

The *Mexico Hybrid Solar Thermal Power Project* (Agua Prieta) seeks to demonstrate the benefits of integrating a solar field with a large conventional thermal facility, contribute to reducing the long-term costs of the technology, and reduce global greenhouse gas emissions. It represents the first pilot application of Integrated Solar Combined Cycle System (ISCCS) power generation technology in Mexico and Latin America, and only the seventh in the world. The technology is seen to hold particular advantages in that it combines solar and thermal sources of energy. The use of solar resources allows for partial substitution of fossil fuels, while thanks to the combined cycle system, energy can also be supplied to the grid as required. Such a system can also be integrated into an existing thermal system, allowing for broad replication. The carbon emissions reductions of 391,270 tons of carbon dioxide are estimated over the 25-year economic life of the plant.

The project has suffered delays in implementation early on due to budget constraints that impeded successful bidding for construction of the hybrid thermal solar plant. Accordingly, and in order to advance with the budget approved, CFE requested a restructuring to allow for reduction in the size of the solar field from 30 MW to 12-15 MW to better align the available budget with market prices. Prices observed and experiences gleaned from two other WBG-GEF-implemented projects in Morocco and Egypt served to inform the restructuring of the solar component. In tandem, CFE adjusted specifications for the gas-based thermal project component. Construction of the solar-field has since progressed according to schedule, with over 80% of works now completed.



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The objective of the Project is to demonstrate and encourage the replication of Integrated Solar Combined Cycle System (ISCCS) power generation technology in Mexico and elsewhere, thereby contributing to the reduction of global greenhouse gas emissions. ISCCS technology includes the installation of a combined cycle plant connected to a field of concentrating solar thermal collectors. The installation of the solar field is being financed by a \$49.3 million GEF Grant, while Mexico's national power utility, the Comisión Federal de Electricidad (CFE), is funding the design and construction of the gas-based thermal plant.

Mexico's Large-scale Renewable Energy Project (La Venta) is working to assist in developing initial experience in commercially-based grid connected renewable energy applications through the construction of an approximately 101 MW wind farm operated by an Independent Power Producer (IPP), while simultaneously building institutional capacity to value, acquire and manage such resources on a replicable basis.

Under implementation since 2007, the Project includes three components: (i) a financial support mechanism that provides a \$1.1c/kWh subsidy to an IPP, via Mexico's national power utility, CFE, for the first five years of the La Venta III wind power plant's operation; (ii) technical assistance to address analytical and policy barriers associated with wind power development; and, (iii) project management support to ensure effective oversight, monitoring and evaluation, and reporting.

As was experienced in developing the Agua Prieta solar thermal power plant, construction of the La Venta III plant faced hurdles which delayed its initial construction timeline. These were due to the project's innovative design - the first application of an IPP mechanism for grid connected renewable energy in Mexico,) failure of the initial bidding process, and tensions emanating from social and environmental issues. The plant went into operation in October 2012 and since that time has produced 338,951 MWh, corresponding to a capacity factor of 30%.

Despite the challenges faced, the project has played a key role in the development of renewable energy in Mexico. The first IPP scheme launched by CFE for production of electricity from renewable energy sources in the country, it is paving the way for the rapid development of wind power generation in Mexico. The Project's contribution to Government's efforts to develop renewable energy in a sustainable manner is also particularly relevant given the Government's focus on energy reform.

INTEGRATED ENERGY SERVICES — INCREASING ACCESS THROUGH RURAL ELECTRIFICATION

Mexico has an electrification coverage rate of nearly 95 percent, yet in the predominantly rural areas of its southern states, where average electrification coverage stands at 88 percent, millions continue to live without electricity. Electrifying remaining households poses a challenge, given that the majority are located in small, remote communities mired in poverty. Furthermore, the unelectrified population is expected to continue to increase as a result of population growth. In the order of 60 percent of those without electricity are indigenous and hail from communities that also lack access to other basic services and infrastructure such as roads, water, telecommunications, education and health.

The *Integrated Energy Services Project* (PSIE, from the Spanish, *Proyecto de Servicios Integrales de Energía*)

is part of the Government of Mexico's flagship rural electrification program, which aims to increase electricity supply through the expansion of conventional distribution networks and through the use of renewable energies. The project also contributes to one of the strategic objectives of Mexico's National Energy Strategy 2013–2027: expanding energy access for social and human development. Funded by IBRD resources, complemented by a GEF grant that promotes reduction of greenhouse gas emissions through the use of renewable energy for the provision of electricity in rural areas, the project aims to provide 40 communities in predominantly indigenous rural areas with solar-based electricity. The project focuses on development of centralized solar farms, and works with the national utility, CFE, who is responsible to execution of the rural energy subprojects. To date, construction of the first five solar farms nears completion, with bidding processes under way for an additional 20 solar farms. In addition, the CFE has finalized 2 pilot projects in Guaycora, Sonora and La Ciénega, Nayarit that benefit about 200 inhabitants. Such pilot projects have a considerable impact on the daily lives of beneficiaries given the possibilities they offer to store food/medicine in refrigerators, to improve access to education through multimedia/electronic tools, and to carry out activities that require lighting, such as sewing, reading, etc.

MEXICO SUSTAINABLE RURAL DEVELOPMENT

Mexico's rural sector has undergone substantial reforms over the past 15 years, resulting in a largely liberalized, market-oriented, and private sector-driven rural economy. Agriculture however, remains a relatively weak sector of the country's economy. According to Mexico's National Climate Change Strategy (NCCS), agriculture continues to be an important source of carbon emissions (7% of total emissions), primarily due to land-use change, tillage, synthetic fertilizers, and anaerobic decomposition of organic materials. As a means of beginning to address this challenge, as well as to improve the contribution of the sector to the overall economy, the government has prioritized increasing the competitiveness and environmental sustainability of agriculture and agribusinesses in support of climate change mitigation objectives, through promotion of energy efficiency and biomass practices.

The objective of Mexico's *Sustainable Rural Development Project*, which is funded by IBRD resources and a GEF grant, is to promote the adoption of environmentally sustainable technologies in

agri-businesses. Specifically, the project seeks to contribute to the goals of the National Strategy on Climate Change and the President's Special Program for Climate Change (PECC) by addressing energy efficiency and methane capture as it relates to the agricultural sector. One project stream is supporting investments in environmentally sustainable technologies in agribusinesses operating at the various stages of the production chain of agricultural products. GEF support, provided as a matching grant to eligible agribusinesses, is tied to provision of initial capital investments, and to removal of technological barriers to improve energy efficiency through, for example, introduction of solar thermal systems. Another stream seeks to ensure the quality at entry of investment sub-project proposals by partially reimbursing beneficiaries for the costs associated with sub-project business plan preparation, including energy diagnostics when necessary. It further provides beneficiaries with technical assistance for implementation of business plans to ensure effective integration of new technologies at the level of the farm or agri-business.

Institutional strengthening is also a focus, with assistance provided regarding policy development that engages specifically, the Ministry of Agriculture, Livestock Production, Rural Development, Fisheries and Food (SAGARPA) in broader efforts to address environmental considerations and climate change mitigation. In this vein, the project shares important synergies with other WBG activities currently under implementation in Mexico namely, a *Climate Change Development Policy Loan (DPL)* and the *Mexico Low-Carbon Country Case Study (MEDEC)* that is building a program of high-priority GHG mitigation investment needs. Through collaboration, the GEF-funded project can contribute to overcoming knowledge barriers in support of the National Climate Change Strategy.

THE RIO DE JANEIRO SUSTAINABLE INTEGRATED ECOSYSTEM MANAGEMENT IN PRODUCTIVE LANDSCAPES OF THE NORTH-NORTHWESTERN FLUMINENSE PROJECT

The main threats facing the north/northwestern Atlantic Forest region of Rio de Janeiro State in Brazil were deforestation and soil erosion, caused by centuries of land conversion and poor agricultural practices. Between 1990 and 2000, Rio de Janeiro had the highest rate of deforestation of all Brazilian states. The resulting degradation of pastures, soil loss, and decreasing water availability were affecting

the region's 30,000 family farms, as out-migration increased and rural poverty became more entrenched.

The *Rio de Janeiro Sustainable Integrated Ecosystem Management in Productive Landscapes of the North-Northwestern Fluminense Project* sought to introduce an integrated ecosystem management (IEM) approach to guide the development and implementation of sustainable land management (SLM) practices in the North and Northwest (NNWF) regions of Rio de Janeiro State. It promoted an integrated ecosystem management approach to help family farmers adopt sustainable land management practices that conserve and protect fragile agro-ecosystems, while demonstrating that improved land management was economically and socially beneficial. Convincing farmers to adopt better practices was challenging: human and institutional capacity was weak; communities were poorly organized and lacked the capital to finance investments in improved farming techniques; and research was needed to adapt and demonstrate improved natural resource practices suitable to local farming conditions.

Farmers living within selected micro-watersheds were organized to enable them to participate in developing farm diagnostic plans. Project outputs to farmers included financial incentives, training, and technical assistance to adopt innovative practices designed to conserve their agro-ecological assets, reduce land degradation, and improve farm productivity. This experimental approach demonstrated how the state's existing rural development programs could be more agro-ecologically friendly, better-organized, and sustainable at the farm, institutional, and policy levels. Based on experiences and lessons generated by similar WBG-supported projects in the country's south, the project stressed micro-catchments as the best unit for conservation planning and management, local participation, dissemination and replication, and inter-institutional collaboration.

Funded by IBRD resources and a GEF grant, the project also benefited from financing channeled through two prominent national non-government organizations (NGOs): SOS-Mata Atlantica and Conservation International-Brazil. This co-investment strategy enabled state development institutions to reach the local level, overcoming time and distance challenges facing micro-catchment residents while fostering self-managed development.

At completion in late 2011, 2,254 family farmers, who'd been organized in 48 participatory micro-catchment

councils, had invested in 2,728 subprojects that resulted in the adoption of over 4,000 separate conservation practices on 31,360 hectares of farmland. Of these farmers, 588 organized themselves into 87 groups in order to implement small-scale agro-industrial ventures that produce environmentally-friendly goods and services. For 245 of the subprojects, leadership responsibility lay with women. Soil structural stability had improved in 48 micro-catchments, thanks to investments in pasture rotation, soil conservation equipment, agro-forestry systems and riparian forest restoration. As a result of 224 pasture rotation investments, carbon storage exceeded 19,000 tons by project completion.

The cost-effectiveness of environmental impacts also demonstrated positive impacts across a range of investments, such as in poultry and honey production, which generated average rates of return from 26.2 percent to 59 percent. Environmental education events, which stressed the importance of integrating environmental, economic, and social concerns, were organized in 24 municipalities and benefitted 5,700 individuals. This helped anchor behavior change, as reflected by the many farmers who subsequently made conservation investments at their own expense. The project also supported the development of a Payment for Environmental Services (PES) mechanism, which was enacted by State Decree, to support the ongoing sustainability of the investment made. Equally as important, the project supported the analytical foundations for a follow-on WBG loan to the state for a Sustainable Rural Development Project, currently under implementation.

PERU STRENGTHENING SUSTAINABLE MANAGEMENT OF THE GUANO ISLANDS, ISLES AND CAPES NATIONAL RESERVE SYSTEM PROJECT

Peru is one of the most biologically diverse countries in the world. Eighty-four (84) of the planet's 117 existing life zones are found in Peru, and it ranks within the top three with respect to genetic resources and species of fish, birds and amphibians. Threats to the country's marine and coastal diversity and resources include habitat disturbance and destruction, overfishing and destructive fishing, such as the illegal use of explosives and high seas bottom trawling, as well as other economic activities, all of which have contributed to a decline in fish stocks, marine biodiversity and overall ecosystem health. In late 2009, the government of Peru established the

Guano Islands, Islets, and Capes National Reserve System (Reserva Nacional Sistema de Islas, Islotes y Puntas Guaneras or RNSIIPG) to counteract this trend. RNSIIPG is made up of a group of 22 islands and 11 capes spread along 3,000 kilometers of coastline, whose surface coverage totals 140,883 hectares, including the terrestrial sites plus 2 nautical miles around each.

The *Strengthening Sustainable Management of the Guano Islands, Islets, and Capes National Reserve System Project* is being implemented with a view to improving the overall management of marine and coastal ecosystems of the RNSIIPG, and protecting its biological diversity in pilot sites. GEF project funding is complemented by additional resources provided by Germany's KFW. The project has four components. To support institutional strengthening, the project is working to build capacity within the arm of Government responsible for natural protected areas (Servicio Nacional de Areas Naturales Protegidas — SERNANP), as well as in other institutions involved in the management of marine and coastal resources. In tandem, the project promotes collaborative regional management through the development of socially viable marine management models to be carried out through the implementation of locally implemented collaborative subprojects on pilot sites, selected through a consultative process involving SERNANP and local stakeholders.

In order to ensure effective monitoring and evaluation, support is provided for the development of ecological baseline approaches to monitor marine biodiversity, implementation of regular ecological monitoring systems in pilot sites, and institution of a management effectiveness monitoring and evaluation system within SERNANP. The project will also serve to strengthen the capacity of the Peruvian trust fund for national parks and protected areas (Fondo de Promocion para las Areas Naturales Protegidas del Peru (PROFONANPE)) to carry out the administrative and financial management of the project.

OECS PROTECTED AREAS AND ASSOCIATED LIVELIHOODS PROJECT

A trend of degradation of reefs and other coastal ecosystems, including wetlands, tropical forests and seagrass beds, beach erosion, deforestation, depletion of fish stocks combined to threaten important biological systems in the region, as well as livelihoods in agriculture, fishing and tourism, the latter

of which accounts for one-third to one-half of GDP in most of the OECS countries. Tougher safeguards were essential.

The *Protected Areas and Associated Alternative Livelihood Project* contributed to the conservation of biodiversity of global importance in six member countries of the Organization of Eastern Caribbean States (OECS): Antigua and Barbuda; the Commonwealth of Dominica, Grenada; St. Kitts and Nevis; St. Lucia; and St. Vincent and the Grenadines. The project curbed mounting environmental degradation by strengthening the application of environmental safeguards, removing barriers to effective management capacity of protected areas (PAs) and identifying economically sustainable opportunities for environmentally compatible livelihoods in buffer zones. Key to the project's success was the reliance on increased participatory management that involved civil society and the private sector in the planning, management and sustainable use of these areas. Sub-projects were initiated to increase and diversify PA-related income to local communities through tourism development, organic farming ventures and training in biodiversity conservation.



In total, 24,693 hectares of marine and terrestrial areas were protected under six demonstration sites, and management effectiveness was shown to improve across the board in all the countries, based on use of the OECS scorecard system. As a result of the enhanced management in place at the six sites, the habitat of 11 regionally endemic species improved thanks to better preservation processes, including declaration. Four PAs established under the project, the North East Marine Management Area in Antigua and Barbuda, the Annandale Forest Reserve in Grenada, the Central Forest Reserve National Park in Saint Kitts and Nevis, and the Pointe Sable Environmental Protection Area (EPA) in Saint Lucia, demonstrated improved management again measured by scorecard, over the life of the project. Upwards of 500 people received training in livelihoods skills and over 200 more received seed funds, thereby leaving the localities well-equipped to engage in environmentally compatible livelihoods.

In addition to the GEF grant, the project benefited from support extended by OECS, the Organization of American States (OAS) and the French Global Environment Facility (Fonds Français pour l'Environnement Mondial).

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LAC REGIONAL SUSTAINABLE TRANSPORT AND AIR QUALITY PROJECT

At the time of project design, the transport sector in Latin America was responsible for more than 20 percent of carbon dioxide (CO₂) emissions and represented the fastest growing emitting sector in the region, due in large part to the urban growth rate that it was experiencing. With approximately 75% of Latin Americans living in cities, the bulk of vehicle kilometers of travel were occurring in urban centers. Urban transport was seen to represent an obvious, and key, sector through which to tackle long-term greenhouse gas (GHG) mitigation efforts in the region.

The *Regional Sustainable Transport and Air Quality (STAQ) Project* was therefore, designed with a view to reducing the rate of growth of GHG emissions from transport in the region through the promotion of less energy intensive and cleaner modes of transport. Its regional structure was proposed to address transport

and environment issues in a coordinated manner and to ensure that Latin American cities were better positioned to meet the growing demands posed by the evolving climate change agenda. In addition, the fact that the link between the transport sector and climate change mitigation was still poorly understood at the local level underscored the need to develop common working frameworks and methodologies in order to generate platforms for effective South-South exchange. Operations were undertaken at the regional level and three in each of the participating countries: Argentina, Brazil and Mexico. The common focus they shared involved reducing GHG emissions growth rates by promoting an increase in the patronage of less energy intensive urban transport modes, and inducing policy changes that favored sustainable transport projects.

The project's first objective, which involved establishment of a network of local and national government stakeholders, international organizations, and private sector entities to promote policies and actions leading towards more energy efficient and cleaner urban transport systems in Latin American cities was achieved in part. When the project closed in June 2013, the Clean Air Initiative (CAI), which was managing pilot investments in the 11 cities participating in the program, had obtained 34 formal endorsements and leveraged resources in the amount of \$2.2 million, and had a staff of 4 on hand to manage the work plan. However, the volume of financial or in-kind contributions received, given the number of network members engaged, was considered low. This fact led to the WBG's evaluation upon project completion to identify the sustainability of both the network and the institution as a potential risk in the longer-term.

Efforts to assist participating cities to develop sustainable urban transport strategies that integrate climate change and air quality were highly successful. CAI supported STAQ cities in developing strategies that integrated these components through the provision of hands-on, on-demand training and technical assistance through numerous training clinics, conferences and workshops, as well as through webinars. CAI also created, and maintains, a virtual network of regional trainers, experts and institutions under a "train the trainers" approach that is expected to

continue to deliver services and execute activities in Latin America over the long term. The CAI also functions as a repository and clearinghouse for strategies, options, instruments and experiences to design and implement transport programs and projects informed by climate change and air quality considerations. Together, these activities helped STAQ cities integrate climate, land use, and sustainable urban transport concepts into their legal, policy, and planning frameworks, and served to improve their capacity to quantify the impacts of transport policies on climate change and air pollution emissions.

MEXICO ENVIRONMENTAL SERVICES PROJECT

Over the past 20 years, 20% of land in the Latin America and Caribbean region has been set aside for conservation using novel approaches to finance preservation efforts including, building partnerships to garner non-public finances such as payments for environmental services, incentive-based conservation contracts and co-management with communities and NGOs, amongst others.

Mexico adopted a payment for environmental services scheme to combat the significant pressure that urban sprawl and expansion of extractive industries and agriculture were putting on its forests and coastal areas with respect to water quality/supply and deforestation, which threatened the economic activities and the welfare of Mexico's people, while also engendering loss of globally important biodiversity. Alongside complementary regional and local conservation programs, the *Payment for Ecosystem Services Project* worked to enhance the provision of environmental services of national and global significance and secure their long-term sustainability by instituting local payments for environmental services (PES) mechanisms in eight pilot areas. The project also sought to enhance and protect biological diversity and preserve globally significant forest and mountain ecosystems by paying forest landowners to maintain woodlands to protect the ecosystem and reduce the risk of deforestation. A similar scheme was also implemented by a WBG-GEF Project in Costa Rica.

As a result of the project's implementation, the number of hectares under environmental service contracts that were providing environmental services in hydrological, biodiversity conservation and/or carbon sequestration benefits from existing funding sources grew by 500% to 2.5 million hectares, while the surface area under environmental service contracts that were providing environmental services in biodiversity conservation and/or water services from new funding mechanisms that had been established by the project totaled 57,357 hectares. Stand-alone local PES mechanisms were designed and under implementation at four sites to contract (buy and generate) environmental services in priority areas: Cuenca del Rio Pixquiac, Veracruz; Fabricas de Agua Centro de Sinaloa; SAS_ Veracruz; and Cuenca del Alto Nazas Irritila. A total of 353,340 ha of forests and other natural ecosystems of global biodiversity significance were under effective conservation, involving protection and sustainable management by landowners prior to project completion, and more than 2,800 PES contracts had been issued to conserve forest or other natural ecosystems in areas of globally significant biodiversity. At least 15 proposals for new carbon sequestration projects were submitted to potential buyers during the life of the project, demonstrating an achievement of 350% against the target value identified at concept stage; one project in Oaxaca commercialized 76,821 tons of carbon on a surface of 2,973 ha during the period 2008 to 2011 alone.

Institutional arrangements to facilitate PES mechanisms' management and learning were established and properly staffed and resourced to support replication and scale up of the market-based PES program. The capacity of CONAFOR, the National Forest Commission to manage a nationwide program, including 21 active PES sites, improved significantly. Indeed, thanks to the project, CONAFOR now manages a program three times larger than without the project, and benefits from corresponding institutional arrangements to support future growth. The project offered practical lessons in mounting successful financing schemes to protect and maintain valuable and vulnerable ecosystems, and clearly demonstrated the potential that ecosystems hold in helping transform biodiversity conservation into an engine of green growth.





Engaging Private Sector Partnership

The GEF and the World Bank Group share a strong interest in involving the private sector to support sustainability. The World Bank, through its private sector arm, the International Finance Corporation, has offered technical assistance and financing solutions to transform markets through direct investments, advisory services, standard-setting and, creation of business enabling environments. A series of successful initiatives have been initiated that target private sector engagement and the use of non-grant instruments to pioneer risk mitigation, introduce innovative financial products and promote open and competitive markets in client countries.

Broadly speaking, the projects implemented by IFC with GEF support have focused on addressing barriers that impede wider private sector participation and prevent faster, more widespread or more long-term sustainable adoption of technologies, financial products or business models that address global public goods. For example, the joint World Bank-IFC Lighting Africa Initiative that promotes affordable, modern, off-grid lighting market in Africa has been successful in removing key barriers to developing a market for clean, low-cost, and quality lighting products. To date, the program has contributed to 7.7 million people gaining access to better lighting. IFC's partnership with the GEF also enabled IFC to pioneer risk-sharing facilities to promote renewable

To date, the program has contributed to 7.7 million people gaining access to better lighting. IFC's partnership with the GEF also enabled IFC to pioneer risk-sharing facilities to promote renewable and energy efficiency financing by local banks.

and energy efficiency financing by local banks. *The Philippine Sustainable Energy Finance program*, supported by GEF in 2007, recently won "Momentum for Change Lighthouse Activities" award launched by the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat for helping increase private sector financing for sustainable energy in the country.

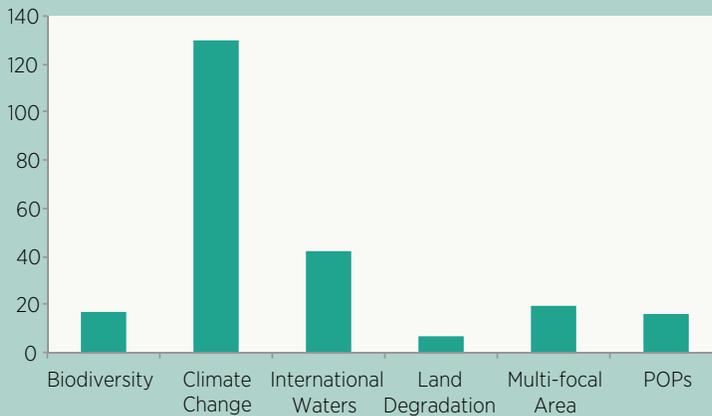
IFC currently manages two GEF-funded programs — the Environmental Business Finance Program (EBFP) and the IFC-GEF Earth Fund Platform. Projects under both programs use a wide range of non-grant financial instruments, such as debt, subordinated debt, convertible loans, equity and guarantees to test and pilot new initiatives through innovative financial structures or the adoption of new technologies, as well as

support scale up of innovative financial structures or technologies. The EBFP program is currently tracking more than \$150 million in co-financing and leverage in its portfolio. The IFC-Earth Fund platform is a platform under the GEF Earth Fund, a public-private partnership (PPP) initiative established by the GEF in 2008 in recognition of the fact that private sector initiative in climate change is vital to achieve the world's mitigation and adaptation goals. By late 2013, the IFC-Earth Fund platform had provided \$15 million in funding for investment and advisory projects with a total value of \$133 million, representing a leverage ratio of about 7.9.





Middle East and North Africa Region:
GEF-5 Distribution by Focal Area (US\$m)



MNA Portfolio Highlights

- Programming of \$230.9million
- Activities underway in 8 countries, as well as 3 at either regional levels
 - » 18 active projects closed during the period
 - » 5 projects closed during the period
 - » 3 new projects under preparation

MIDDLE EAST AND NORTH AFRICA

DEVELOPING DJIBOUTI'S GEOTHERMAL CAPACITY

Djibouti depends entirely on imports to meet its electricity needs. And access to that electricity remains an elusive luxury for the bulk of the population due to high tariffs, expensive connection costs and the limited coverage of the electricity grid, which sources only Djibouti City and its outskirts.

The recently launched *Geothermal Power Generation Project* is working to tap into the volcanic riches in Fiale Caldera near the country's Lake Assal region as a source of geothermal power, and assist Djibouti in assessing the commercial viability of this resource. The project is the first phase in a two-step process to develop local geothermal generation capacity that could help Djibouti fully meet its peak demand, alleviate energy dependency, reduce electricity production costs by 70 percent and boost access to electricity for all its citizens. Clean geothermal energy would also mean a reduction in carbon dioxide emissions and a healthier environment for the population. The project's first phase will focus on exploring and assessing the feasibility of large scale geothermal power generation. A second phase will initiate competitive tendering of the development of an estimated 56 MW geothermal power plant to private power producers.

The project is financed by an IDA credit supported by a GEF grant, as well as important additional financing mobilized by Bank from the OPEC Fund for International Development (OFID), the African Development Bank (AfDB), the Agence Française de Développement (AFD), the Sustainable Energy Fund for Africa (SEFA) and the WBG's Energy Sector Management Assistance Program (ESMAP) Global Geothermal Development Plan (GGDP).

MIDDLE EAST AND NORTH AFRICA DESERT ECOSYSTEMS AND LIVELIHOODS PROGRAM (MENA-DELDP)

The Middle East and North Africa region houses two of the world's largest deserts: the Sahara and the Arabian. On a global scale, deserts play an important role as regulators of ecosystem services namely, air quality, atmosphere composition, and climate regulation. In the MENA region, deserts encompass unique and highly adapted ecosystems that provide life-supporting services to the environment and the communities that inhabit them as well as linking to productive sectors such as tourism and agriculture. Sustaining the capacity of desert ecosystems to provide goods, services and livelihoods in an integrated manner represents a critical cornerstone for long-term development prospects in fragile deserts at the local, national and regional levels.

Desert communities represent a small proportion of the overall population of the region. While they demonstrate a highly sustainable level of social cohesion, desert populations are not fully integrated in development policies and plans and are not always in a position to capitalize on new economic opportunities to improve their livelihoods, despite the valuable know-how, practices and techniques they possess to adapt to their arid environment.

The *MENA-Desert Ecosystems and Livelihoods Program (MENA-DELDP)* is a partnership between the WBG, the GEF and four countries in the region. This 10-15 year program aims to contribute to the enhancement of livelihoods in desert ecosystems by harnessing their value in an environmentally and socially sustainable manner so that the flow of desert goods and services can be optimized. Its framework promotes improvement of the flow of desert ecosystem services and knowledge of valuable adaptive practices for sustainable development into a positive feedback loop. The program pilots desert-specific economic activities that aim at increasing the resilience and adaptation of desert communities and ecosystems, while maintaining the health and diversity of the desert biome.

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Projects focus on improving the sustainability of investments in one or more productive sectors including, tourism, agriculture, and livestock grazing, through adoption of an integrated ecosystem management approach. All the MENA-DELDP projects emphasize a participatory approach, capacity building, and the harnessing of local knowledge as a means to influence meaningful and sustainable behavior change. An overarching regional knowledge and coordination project seeks to strengthen networks and communities of practice by sharing experiences and knowledge regarding key desert ecosystem management issues. Areas of note include:

- **Jordan's** Badia is a large desert area east of the country's western highlands. This arid region, which receives annual rainfall of only 50 to 200 mm covers 80 percent of the country's territory, and remains largely poor. Nearly half of the Badia is rangeland, and the livelihoods in the region's southern and northern zones, which include nomadic, semi-nomadic and settled communities, are largely dependent on raising livestock. Over the past two decades, impacts from both human induced and natural factors, including climate change, have engendered significant degradation of the region's highly diverse and

fragile ecosystem. Woodcutting, overgrazing, and intensive agricultural practices have decimated natural habitats and exacerbated soil erosion. Important breeding areas for migratory birds' have witnessed decreasing numbers of migratory visits, and a related drop in successful breeding events, due to excessive vehicular traffic, and surface and underground water resources are increasingly threatened by unsustainable water use and extraction which in turn, affects flora and fauna habitats and micro-ecosystems.

The *Badia Ecosystem and Livelihoods Project (BELP)*, one of the MENA-DELDP projects, supports sustainable livelihoods and enhances ecosystem services through participatory approaches in selected areas of the Jordan Badia. One aim promotes a people-centered sustainable natural resource base development approach, with the goal of improving range and fodder production services through establishment of rangeland reserves, as well as strengthening community engagement in the identification, and ongoing management and maintenance of reserves in the Badia's south. Local employment opportunities based on biomass restoration activities and site monitoring are also under consideration. Another approach seeks to reduce rangeland degradation while enhancing local development benefits by tapping into Jordan's high ecotourism potential through expansion of existing centers of tourism in region's northeast, home to attractive landscapes, unique biodiversity and archeological sites. The Royal Society for the Conservation of Nature (RSCN), with whom the Bank has cooperated on past protected areas initiatives, manages these efforts in partnership with Jordan's leading nature-based tourism agency and local communities.

- **Tunisia** tourism is key to the country's economy: Over seven million tourists each year, principally from Europe, many of whom are drawn to high volume beach resorts in coastal areas. This sector contributes 7% of GDP and provides employment for some 10% of the population. The country's interior, which remains largely underdeveloped in terms of tourism, houses significant cultural, historical and natural attractions in varied desert ecosystems that harbor a rich biodiversity of highly adapted, unique species. The biome's biodiversity is under growing threats from habitat encroachment, overexploitation, and poaching, even within protected areas, whose numbers have grown in recent years, due principally to

lack of enforcement capacity, lack of community involvement, and lack of awareness.

The Tunisia *Ecotourism and Conservation of Desert Biodiversity Project*, also under MENA-DELP, is working to improve desert livelihoods through enhanced provision of ecosystem services, with a view to laying the foundations for ecotourism development and related local income generation. The project is mining the potential that Tunisia's arid desert ecosystems hold for tourism diversification and development based on adoption of a sustainable ecotourism model in which desert ecosystem integrity is intrinsically linked with socioeconomic benefits flowing to local communities. This approach provides the opportunity to promote both traditional and innovative land and natural resource management practices within adjacent agro-ecosystems, thus preserving the adaptive response capacity of local communities. And, the creation of appropriate regulatory and financial incentive mechanisms for the development of ecotourism activities are expected to facilitate private sector involvement in the establishment of ecotourism ventures and in the piloting of management approaches that include community participation.

- **Morocco** agricultural production: This sector represents 15% of GDP, 23% of its exports, and employs nearly half the country's population, it is vital to the country's economy. It is characterized by both highly commercialized production processes and small-scale farming. The Plan Maroc Vert (PMV), which is supported by a WBG investment, outlines the country's agricultural strategy from 2008 to 2020. The PMV is predicated on a series of systemic reforms and investments that aim to double the sector's output by 2020 and create 1.5 million new jobs expanding opportunities for the integration of commercial farming into the international economy, while enhancing the participation of small farming communities within domestic markets. The PMV aims to increase the value of Moroccan agriculture and promote balanced economic growth, particularly in areas that traditionally have suffered social and economic marginalization. One of its pillars focuses specifically on the plight of small farmers in the country's marginal areas.

Morocco's rural areas are home to nearly half the country's population, 70% of whom are poor. For small farmers, the majority of whom reside in marginal zones, poverty and environmental degradation go hand in hand. Low and erratic rainfall,

limited access to irrigation and limited capital with which to invest in agricultural inputs contribute to low production quality and output, impeding prosperity. Poor levels of education and lack of organization compound the problem through agricultural overexploitation and poor land management, leading to land and water degradation, loss of biodiversity and reduced production capacity, which further limit access to markets and income, and entrench poverty. Through promotion of sustainable intensification, the Plan Maroc Vert (PMV), the country's 2008–2020 agricultural strategy, seeks to improve the livelihood of small farmers while protecting natural ecosystems, thus breaking the cycle of poverty on marginal lands.



Within the broader context of WBG support to the PMV, the GEF-funded *Morocco Social and Integrated Agriculture Project (ASIMA)*, which is part of the MENA-DELP family of projects, focuses specifically on the issues facing small farmers on marginal lands. The project finances pilot investments that support the integration of land, water, and biodiversity conservation considerations using an integrated ecosystem management approach. Training for small farmers will focus on the implementation of conservation measures appropriate for select agri-food chains typical of marginal areas including, cacti, olives and aromatic and medicinal plants, and will explore synergies between agri-food chains. Adoption of sustainable production methods within each agri-food chain is expected to enhance small farmers' integration into domestic markets, while cross-cutting integration between agri-food chains will promote better use of limited natural resources and enable better management of by-products.

The ASIMA project's objectives are aligned with the actions promoted by two WBG programmatic agricultural Development Policy Loans (DPLs) that support the PMV efforts to improve efficiency of domestic markets. The project is further complemented by the related *Integrating Climate Change in the Implementation of the PMV (PICCPMV)* project funded by the Special Climate Change Fund (SCCF), which seeks to do exactly as its name suggests: promote important agriculture and climate change synergies by integrating climate change considerations into the Plan Maroc Vert's implementation. The blending of GEF and SCCF grants with WBG lending provides the Government of Morocco with a comprehensive means to tackle critical and inter-related problems, thereby strengthening the potential for future economic, environmental and social sustainability in the agricultural sector.



INTEGRATED COASTAL ZONE MANAGEMENT ALONG MOROCCO'S MEDITERRANEAN COAST

Morocco's expansive coastlines harbor rich ecosystems vital to the country's economy, providing food and employment from agriculture, fisheries and tourism. Over time, the country's coasts have also become

highly urbanized and densely populated: today they are home to more than half the country's population.

For over a decade, Morocco's Mediterranean coastline, which had long remained less developed than the country's Atlantic coast, has undergone significant economic development. Competing coastal natural resource uses, together with growing coastal population density and urbanization, have taken their toll on the zone's ecosystems, negatively impacting marine biodiversity and ecologically sensitive areas. Environmental costs are embodied in water supply issues, salinization of aquifers, coastal erosion and sewage and solid waste disposal. The region's coral reefs, which provide a range of ecosystem services including, coastline protection, large-scale commercial and smaller-scale artisanal fishing, and tourism activities such as, diving, snorkeling and recreational fishing, are particularly threatened. The impacts of climate change are projected to aggravate existing environmental problems, hinder infrastructure development and maintenance, and significantly impact the livelihoods of coastal residents.

To better manage the competing interests affecting the coast, an integrated coastal zone management (ICZM) approach has been adopted to compel the diverse coastal sectors to work together under the aegis of cooperation to eliminate the negative externalities associated with their activities. In order to promote application of the ICZM approach by users of coastal resources, and to help the Government of Morocco meet its obligations under the regional Sustainable MED Program to which it is party, GEF funds were secured to support Morocco's transition towards sustainable development along its Mediterranean coast.

The Integrated Coastal Zone Management Project works to protect biodiversity and ecologically sensitive areas, promote sustainable in situ coastal resource management, and generate related indirect benefits for other countries bordering the Mediterranean Basin, as well as strengthen coastal communities' resilience to climate change and regional efforts to address the decline in biodiversity and fisheries. To meet these ends, the project focuses on enhancing and accelerating the implementation of trans-boundary pollution reduction, improving water resources management, and improving biodiversity conservation measures in priority hotspots and sensitive areas.



TUNISIA NORTHERN TUNIS WASTEWATER

Tunisia, like many other countries in the region, faces serious water challenges. Highly variable temporal and geographical rainfall patterns exacerbate the problem. The limited water resource challenges that plague the country are further compounded by stressors, such as agricultural usage. This use alone, in a key economic sector that employs about a quarter of the country's workforce, commands 80% of the country's water resources given that 90% percent of arable lands are located in water-poor arid and semi-arid zones. It should therefore, come as no surprise that Tunisia has become one of the most advanced countries with respect to water management in the MENA region. Important results have been achieved with respect to water supply and sanitation, yet Tunisia's water crisis continues to increase in magnitude, driven by a variety of external factors. Ongoing pressure to support rural employment opportunities has led to further expansion of agricultural production through the development of new irrigation perimeters, which has increased existing over-exploitation of aquifers in several regions. Urban growth is burgeoning, especially in the greater Tunis area and bringing with it increased water needs. The impacts that mounting climate change will bring to bear are of growing concern.

Compounding growing water scarcity, Tunisia's coastal and marine ecosystems are increasingly threatened by the combination of agricultural and wastewater discharges. The Gulf of Tunis is by far the

country's biggest pollution "hot spot". Home to 2.3 million people, the Greater Tunis area is also a major tourist destination. Currently, 86% of the volume of wastewater collected is treated in wastewater treatments plants (WWTPs) in the greater Tunis area. The current infrastructure, which is running at overcapacity in certain plants, does not allow for proper treatment and disposal of the effluents such as removal of nitrogen and phosphorus and lacks submarine outfalls for efficient disposal. It is clear that the current infrastructure is not adequately structured to take on the treatment of any additional wastewater volume within the growing urban sector.

In the face of these challenges, the government's National Development Plan (2007–2011) made the protection of sensitive ecosystems, the reduction of nutrient discharges into the Gulf of Tunis, and the use of treated wastewater a source of water for agriculture and, where feasible, groundwater recharge, national priorities. With the support of the Bank, the government requested funds from the GEF to help achieve these objectives. An \$8.03 million GEF grant was approved to co-finance a \$52 million World Bank loan, with the Government contributing an additional \$8.6 million in co-financing. The project's higher level objectives seek to reduce the environmental impact of the wastewater discharge in the Gulf of Tunis, with particular focus on seawater quality in the northern Tunis seashore, and to support the implementation of Tunisia's National Program for Wastewater Reuse. The project complements existing, funded activities under implementation with the World Bank and other partners. An investment program in the water sector, financed jointly by the World Bank, the French Development Agency (AFD) and the African Development Bank (AfDB), supports implementation of priorities set forth in the National Development Plan and focuses on modernization of water resources management through, for example, increased reuse of treated wastewater by farmers. The Tunis West Sewerage project in contrast, targets infrastructure development through construction of a wastewater treatment plant in the Western area of the city, which will greatly improve the quality of sanitation services in greater Tunis.

YEMEN AGROBIODIVERSITY AND ADAPTATION

In the highlands of Yemen, a GEF-funded agro-biodiversity and climate adaptation project is enhancing

coping strategies for change through the conservation and use of agro-biodiversity and traditional agricultural practices.

Over 40% of Yemen's population is impoverished. Many of the country's rural poor inhabit its highlands, one of the driest and harshest terrains in the world, where cultivation of rainfed agriculture remains, as it has for centuries, the primary means of livelihood. The region's agro-ecosystem offers rich agrobiodiversity in the form of sorghum, barley, and chick pea, globally important crops that have a history of early domestication in this area. Several landraces of these crops are the result of centuries-old selection, wherein genetic varieties that were shown to offer better resistance to diseases and pests and greater resilience to drought, local soil quality and climatic conditions, were adopted. Traditional methods of water harvesting and storage, as well as terrace construction and maintenance have been invaluable in protecting the agro-ecosystems in the highlands against adverse climatic and environmental events by improving water use efficiency and minimizing land degradation. The agro-biodiversity of the highlands, together with the traditional knowledge of farmers, has been the cornerstone of communities' ability to adapt to changing climatic conditions in the past.

Increasingly however, information on these resources is dissipating due to growing urban migration and the adoption of modern high-yielding varieties that involve greater dependence on irrigation for farming. There is also general consensus that the increased variability in precipitation brought about by climate change, poses increased risk of crop failure and loss of livelihoods in a region where water is a scarce and the level of poverty is already far too high. Traditional varieties and practices are seen to represent an important repository of genetic variability that can both protect small farmers by diversifying their production and provide important genetic traits to improve 'modern' varieties through purposive breeding. The conservation of agro-biodiversity is also seen to be critical to building climate resilience of rainfed agro-ecosystems and contributing to enhancing national capacity in climate modeling and analysis.

Building on a long-standing partnership of development lending in the agriculture sector with the Bank, the Government of Yemen and the Bank are channeling GEF funds in support of the Agro-biodiversity and Climate Adaptation Project (ACAP). ACAP is developing national capacity in climate modeling and analysis and which, in turn, seeks to 'climate proof'

rainfed agriculture and more broadly, lay the groundwork for climate resilient development in future. Specific objectives include:

- Capturing and assessing traditional agro-biodiversity knowledge through development of an inventory of farmers' knowledge on the adaptive characteristics of local landraces and their wild relatives, and identifying and testing selected landraces for climate resilience with a view to developing vulnerability profiles for the crops. Information on the agro-biodiversity resources will be used to develop natural resource management and alternative income-generation plans with the communities as part of a strategy approach to building climate resilience in the highlands.
- Raising awareness on climatic changes and developing local predictive capacity of weather patterns, climatic changes, and longer term climate change scenarios for Yemen's rain-fed areas.
- Enhancing the range of coping mechanisms available to farmers to integrate climate resilience into their rain-fed agriculture practices including, in-situ conservation, improved terracing with soil and water conservation practices, and expanded crop choice and cropping patterns.
- Improving the capacity of key agencies and stakeholders to collect and analyze data to improve climate predictions and manage information flow to enhance the uptake of coping mechanisms throughout the agricultural sector, while at the local level, developing a climate-resilient rain-fed agriculture strategy and piloting a menu of coping strategies in partnership with the communities.

To enhance further the potential for sustainability of action, these efforts are complemented by work under the Pilot Program for Climate Resilience (PPCR) of the Climate Investment Funds in Yemen.

JORDAN INTEGRATED ECOSYSTEMS/RIFT VALLEY

The Jordan Rift Valley is an integral part of the Great Rift Valley, a globally important ecological corridor and a major flyway between Africa, Europe, and Asia that houses a large variety of ecologically diverse habitats and that is used by millions of migrating birds each year. The Rift Valley also holds many important ecosystems, including the Dead Sea, the Gulf of Aqaba, and the Jordan and Yarmouk river systems, as well as unique habitats of regional importance like the *Quercus aegilops* oak forests of Yarmouk. The valley's

critical geographical location and its agriculturally productive land resources have attracted infrastructure and tourism development, and land conversion. These developments threaten the Valley's unique ecological and cultural values and are leading to increasing habitat degradation and species loss.

Under the auspices of the Integrated Ecosystem Management Project, Jordan's Royal Society for the Conservation of Nature (RSCN) has been working with local communities to secure the economic and ecological integrity in and around four of the Valley's high biodiversity sites. The Project's design drew on lessons generated from previously implemented biodiversity activities in order to build an integrated ecosystem management network founded on consultative planning and management procedures, involving all relevant stakeholders. The project therefore, promotes a strategic community-based approach to management of special conservation areas (SCAs), a process which involves communities directly in land-use and conservation planning and management. Seven SCAs have been recognized in the Rift Valley Management Plan.

Further, given the expectation that development pressures will continue to impact the Valley in the coming years, the project is applying integrated ecosystem management principles to land use and protected areas management to ensure that biodiversity conservation is viewed as a positive contribution to development and not detrimental to it. Such an approach favors the buy-in and participation of local communities by giving them a say over the use of their natural resources. This is particularly important for the marginalized agricultural and pastoral communities in the Valley who are more likely to benefit from appropriate, long-term opportunities for improved livelihoods offered through ecotourism and other nature-based businesses, than from large infrastructure projects.

This project, as well as others in which the WBG-GEF Program has partnered in Jordan, owe a good deal of their success to the involvement of RSCN. An experienced NGO with good political support, including that of the royal family, RSCN has sought creative conservation solutions appropriate to the Jordanian landscape and culture, working with local communities to reduce pressure on high biodiversity areas while ensuring appropriate local benefits from new and alternative livelihood activities, backed with strong marketing of products. Lessons yielded from Jordan have proven highly relevant to other conservation projects in the region.

CONCENTRATING SOLAR POWER IN EGYPT AND MOROCCO

Egypt has a rapidly expanding economy that needs a reliable and low-cost source of electric power. While connectivity is widespread, the reliability of the electricity supply is poor, a problem compounded by the country's growing population and economy, which place continuous additional demand for electricity generation on Egypt's energy infrastructure. A central element of the country's comprehensive economic reform program therefore, centered on diversification of energy production, and improvement and expansion of the country's electricity infrastructure, including the its transmission and distribution networks.



The *Kureimat Solar Thermal Hybrid project*, which blended a \$49 million GEF grant with World Bank lending of \$200 million in the energy sector for both Egypt and Morocco, allowed the government to develop Egypt's solar energy capacity and increase the share of renewable energy within the Egyptian energy generation mix by providing incentive to grow technological change suitable for a low carbon economy. Drawing upon experiences gained from previous work in this sector, the Kureimat project adopted an innovative Integrated Solar Combined Cycle (ISCC) design that incorporated a parabolic trough solar field with a conventional combined-cycle power plant.

The Kureimat Integrated Solar Combined Cycle (ISCC) power plant reached commercial operation in June 2011. The operation is one of the first fully dispatchable hybrid CSP-combined cycle power plant projects to have been deployed at a commercial scale in the world. The plant has contributed to

diversification of Egypt's electricity grid, generating 20 megawatt (MW) of electricity, enough to serve about half a million households, thereby contributing to improved living standards and sustainable economic growth.

The contributed positively to the government's objective of diversifying electric power production by demonstrating how de-carbonization of the power sector could be encouraged through the large-scale development of new energy production processes using modern, low greenhouse gas emitting energy technologies. Based on limited initial data, the total electricity generated from solar sources at Kureimat totaled 35.1gigawatt hours (GWh)/year, surpassing the project's targeted value was 33.4 GWh, and the solar output as a percentage of total energy produced by the hybrid plant was 4.1 percent.

The Kureimat ISCC experience confirmed that this low greenhouse-gas emitting technology holds good prospects for scale-up, and can contribute positively to the competitive diversification of Egypt's energy mix. The plant's construction supported local entrepreneurship, helping Egyptian companies move into the field of innovative CSP technology and job creation. During construction, all road works, modifications to access roads, site leveling, excavation works, civil engineering, and erection of steel structures and solar collectors were undertaken using local manpower. Sixty percent of the materials and services used during construction of the solar plant were sourced from local or national firms including, the steel and cables used to erect the structures that support the parabolic troughs, the solar collectors which were pre-fabricated from welded steel parts, and steel mounting structures and tubes. Now in operation, the plant employs 220 local people full time including both highly skilled engineers and unskilled laborers. A host of Egyptian companies gained valuable experience working to support this new technology such that they are now able to submit bids to participate in dissemination of the technology in other countries in the region.

In part due to the experience gained through implementation of this project, the government launched preparation of another CSP project at a scale of 100 MW at Kom Ombo, under the MENA CSP Scale-up Initiative, a \$5.6 billion program led by the WBG that includes \$750 million of concessional funding from the Clean Technology Fund and is working closely with the African Development Bank and other European, Arab, Islamic, and Japanese donors, to

implement nine commercial-scale power plants in Algeria, Egypt, Jordan, Morocco and Tunisia, and two European Union (EU)-MENA interconnection projects.

Morocco's consumption of electricity, fueled by economic development, population growth and the country's policy of universal access to electricity, is rising dramatically. The country is strongly reliant on the import of fossil fuels for electricity generation given its lack of endogenous resources, and this import need is only projected to become more entrenched as time goes on. Renewable resources such as solar energy, which is bountiful in Morocco, offer the country an opportunity to decrease dependency on foreign imports.



Under the auspices of the same GEF-supported global program to accelerate cost reduction and commercial adoption of large-scale low greenhouse gas (ghg) emitting generation technologies that supported the Kureimat project in Egypt, the Morocco Integrated Solar Combined Cycle Power project used a \$43 million GEF grant, with significant additional financing necessary provided by the Government and through lending from the African Development Bank (AfDB), to finance a portion of the development of an ISCC power plant at Ain Beni Mathar in the country's north-east. The project selected an ISCC configuration to introduce solar field based electricity generation into Morocco based on analysis that demonstrated that the integration of the solar field with the combined cycle technology offered a number of important cost reductions and operational advantages with respect to reduced daily solar energy losses over the construction of an independent solar thermal plant.

The Ain Beni Mathar Integrated Solar Combined Cycle power plant was commissioned in October 2010. It integrates a solar trough collector field with a natural gas-fueled fossil-fired power generating element. The project is one of the first power plants to integrate concentrated solar power (CSP) and natural gas on a large scale ever built in the world. Since November 2011, the plant has been operating satisfactorily at expected capacity.

The project has generated a number of positive social impacts for both the local population and the local economy, both of which relied on agriculture and livestock grazing. Direct, as well as indirect sources of employment have been generated by the plant. During its construction, 500 jobs were filled by local recruits and since the production phase began, 50 local jobs have been secured. Important improvements in local infrastructure that benefit the local population and the ICCS plant have been made, such as the rehabilitation of local roads. Equally as importantly, connectivity and access to electricity, particularly for the rural poor, is now possible.

TUNISIA AFRICA STOCKPILES PROGRAM

Over the past decades, poor pesticide management practices, along with the imposition of bans on the use of certain chemicals in other regions, led many African countries to accumulate significant quantities of pesticides. Over time these have degraded, lost their efficacy for controlling pests and become obsolete. As a result, the continental landscape ended up littered with stockpiles of still potentially toxic pesticides, often improperly stored, that present risks to human and environmental health. Given that abandoned pesticide stockpiles and dumps are frequently found in rural areas or poorer communities, a disproportionate impact is borne by the poor, many of whom scavenge for recyclables unaware of the potential dangers involved.

By the early 2000s, many African countries had ratified international agreements, developed hazardous waste regulations, including imposing controls for illegal dumping, imposed tighter border controls and adopted Integrated Pest Management (IPM) approaches to reduce reliance on pesticides. Stockpiles of obsolete pesticides were understood to pose a serious environmental and social threat until safely removed and destroyed. A number of countries in the region, Tunisia

included, developed the Africa Stockpiles Programme (ASP), a regional GEF project, with the support of the WBG and the Food and Agriculture Organization (FAO). The ASP sought to prevent further accumulation, support clean-up of contaminated waste sites and facilitate safe destruction of stockpiles by building technical, institutional and financial capacity, as well as the necessary regulatory capacity to manage pesticides into the future to prevent potential re-occurrence of the stockpiles problem.

In Tunisia, work centered on building capacity through training and awareness-raising to prevent re-accumulation of obsolete pesticides stock, supported by the Fonds Français pour l'Environnement Mondial of the French Development Agency (FFEM/AfD), and clean-up and disposal of existing stockpiles in cooperation with the WBG. The project trained both governmental and non-governmental stakeholders across a spectrum of sectors, and organized workshops on sound pesticide management and environmental protection targeted at different audiences including, journalists, NGOs and technical staff. More than 400 technical staff were trained under the auspices of a 2011 awareness campaign that reached out to 8,000 pesticide users across the country. In addition, a forward-looking pesticide management plan of action, developed following diagnostic study of the country's sound chemicals management needs, was finalized and is under implementation. An empty container management program launched at two sites in 2009 collected and cleaned empty containers. Evaluated in 2010, it was judged successful and subsequently extended to two other governorates.

The project has also allowed for publicly-held obsolete pesticides stocks and associated waste to be inventoried. This exercise revealed over 2,000 tons of waste including, 1,280 tons of obsolete pesticide stocks and 756 tons of associated waste, scattered at over 200 sites across the country. The availability of an inventory allowed for risk profiling of the stockpiles to be undertaken which in turn, informed the elaboration of a comprehensive prevention program captured in Tunisia's Country Environmental and Social Assessment (CESA). By March 2012, over 1,200 tons of the inventoried waste had been repackaged and shipped to Europe for disposal in accordance with environmentally and technically sound disposal methods.





EnGendering Equity

During the GEF-5 replenishment period the GEF adopted a Policy on Gender Mainstreaming to more clearly formalize the GEF commitment to establishing operational systems for mainstreaming gender. The policy's development was informed by recommendations in the Fourth Overall Performance Study (OPS4) conducted by the GEF Independent Evaluation Office, as well as by input solicited from the World Bank and other agencies that form the GEF partnership. In follow-up in 2013, the GEF Secretariat undertook a review of the WBG's systems and practices used to ensure gender informed investments and confirmed that they fully met the GEF policy's objectives.

The next step in the operationalization of the GEF policy calls for GEF Agencies, and other experts, to work with the GEF Secretariat on developing a Plan of Action on gender mainstreaming that further integrates gender consideration into GEF operations. The WBG-GEF Program strongly supports gender mainstreaming across all its areas of intervention, as relevant, and is committed to effectively contribute to the elaboration of a Plan of Action that supports the GEF Policy based on practical experience gained from across the portfolio to date. Examples include:

- *The Tajikistan Environmental Land Management and Rural Livelihoods Project:* While it is widely acknowledged that women carry out most of the agricultural labor in Tajikistan, relatively few have meaningful decision-making power. The project

Women engaged full-time in fish processing, smoking and salting are estimated to represent the equivalent of 27,000 full-time jobs.

seeks to address gender and social inclusion issues through its use of participatory processes, and the monitoring and evaluation of project results. Community mobilization activities are using mechanisms, such as women only sessions, that help ensure participation. Rural investment design is taking into account women's roles and responsibilities and builds on their skills, interests and motivations. The project will also explore mechanisms, such as financial incen-

tives, to encourage female participation in the management of resource user groups. Fully 40% of project beneficiaries are expected to be female.

- *West Africa Regional Fisheries Program in Ghana Project:* As many as 2.2 million of Ghana's population is dependent on the fisheries sector for their livelihoods, including some 135,000 fishers in the marine sector. Women engaged full-time in fish processing, smoking and salting are estimated to represent the equivalent of 27,000 full-time jobs. The project supports provision of services to promote improved smoking and salting techniques by women fish processors, using awareness-raising, demonstrations, training on improved fish handling practices and efficient processing and drying methods, and targeted education, as well as continuous quality improvements for the technologies identified. Women processors who adopt modern technologies will be linked to credit and marketing facilities to enable them to procure and utilize appropriate tools and equipment. Given the importance of women in Ghanaian fisheries,

the establishment of a national confederation of women's fish processors and trader groups will be facilitated under the project to give voice to this valuable stakeholder segment in the management and development of the nation's fisheries-based businesses and resources.

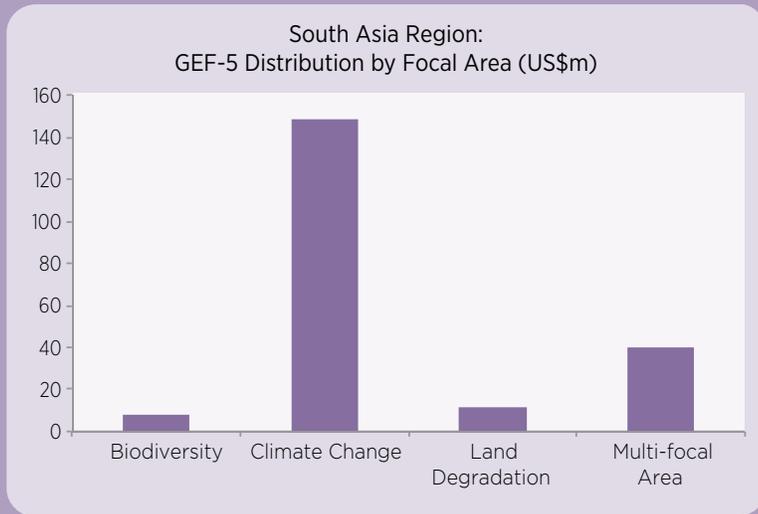
- *Mali's Natural Resources Management in a Changing Climate Project*: The project, one of those funded under the Sahel and West Africa Program (SAWAP), includes a number of specific categories of activities such as, small ruminant fattening and non-timber forest product (NTPF) valorization, which are mastered by women. Such sectors have therefore, specifically been highlighted for consideration for investment support under the project component dedicated to the improvement of livelihoods at community levels. With respect to the monitoring and evaluation one of the project's indicators, related to direct

beneficiaries, will be disaggregated to account for the percentage of female and vulnerable individuals, including displaced and unemployed youth, impacted by the project.

The GEF Plan of Action to be developed and adopted in GEF-6 in support of its Policy on Gender Mainstreaming should build on the existing gender strategies and plans of the WBG and other GEF Agencies in developing tools to guide the GEF partnership forward in order to avoid duplication of efforts and ensure consistency as well as realism based on practitioner experience. Guidance on how gender mainstreaming supports and furthers achievement of global environmental benefits, and how this objective can best be pursued in the various sectors and types of projects specific to the GEF, can be an important incremental contribution to help elucidate good practice and streamline approaches across agencies.







SAR Portfolio Highlights

- Programming of \$208.7million
- Activities underway in 8 countries
 - » 18 active projects (1 implemented by IFC)
 - » 4 projects closed during the period
 - » 7 new projects under preparation

SOUTH ASIA

BHUTAN'S SUSTAINABLE LAND MANAGEMENT PROJECT

The landlocked Kingdom of Bhutan lies in the rugged Eastern Himalayan range. Bhutan's usable resources are limited, owing to difficult and high mountain terrain, vast areas of snow and barren rocks, and dense forests which cover some 72.5 percent of the country. This forest area, which includes scrub forest, is mandated to remain above 60 percent across the national territory in perpetuity. Arable land, which makes up less than 8 percent of Bhutan's territory, is for the most part located in the central valleys and southern foothills, and in these relatively flat areas agriculture must contend with other development activities that engage the country's population, which is growing steadily.

Many Bhutanese therefore, make their living within fragile and inherently unstable ecosystems. Bhutan is a predominantly agrarian society, and 79 percent of the population live in rural areas and subsist on an integrated livelihood system of crop agriculture, livestock rearing, and use of a wide variety of forest products. Some 98 percent of Bhutan's poor live in rural areas. Population growth has led to split inheritance among families, and consequently farmland is becoming fragmented, resulting in less investment in sustainable land management by farmers. The average rural household owns 3.48 acres of land,

often spread over different agro-ecological zones and altitudes.



The *Bhutan Sustainable Land Management Project*, which closed in 2013, worked to strengthen institutional and community capacity to anticipate and manage land degradation in the country. A GEF grant supported demonstration of successful sustainable land management practices in pilot areas, provided lessons and experiences to guide policy development, and enabled the mainstreaming of such approaches country-wide. The sustainable land management (SLM) approach was guided by bottom-up planning at the village level with participation by local farmers and other stakeholders, including resource mapping of village lands as a basis for planning on-the-ground investments in consultation with local farmers.

In addition to the 138 villages in the 9 blocks of villages that comprised the project sites, SLM initiatives were introduced in an additional 30 villages in 23 village blocks. The number of farmer households that adopted SLM practices increased by 70% from baseline, compared to the project's target value of 30%. Measurements taken from soil erosion plots in participating blocks of villages show a 42 percent/annum reduction of soil loss as a result of the application of SLM techniques.

In addition, SLM principles and practices were mainstreamed into the 11th Five Year Plans (2013- 2018) at the national, district and village block levels, were integrated into the 2010 National Land Policy and the approved 2007 Land Act.

The project contributed significantly to the development of high quality baseline data on resource mapping, land cover and land use. The geographic information system (GIS) based mapping of biophysical and socio-economic factors identified the causes and incidences of land degradation, while identifying hotspots to allow the prioritization of SLM investments in action plans prepared by the participating village blocks.

64 The capacity for coordination in implementing SLM practices was strengthened within the Ministry of Agriculture and Forests (MOAF), as well as in other sectors and across different levels of government. From an institutional perspective, and in order to sustain the project's achievements, the MOAF approved the establishment of a land management unit to continue scaling-up SLM approaches and mainstreaming them into national, district and local policies and programs. The success of the project's approach has generated significant interest in replication, and it has currently been integrated into other rural development projects in Bhutan financed by bilateral donors and a WBG credit.

INDIA COAL-FIRED GENERATION REHABILITATION

The objective of the *Coal Fired Generation Rehabilitation Project* for India is to improve energy efficiency (EE) of selected coal-fired power generation units through renovation and modernization (R&M) and improved operations and maintenance (O&M), while reducing greenhouse gas emissions through EE rehabilitation of coal-fired power plants. The project was designed to assist the Government of India in responding to a range of challenges it

faced in its electricity sector including: low levels of connectivity, particularly in rural areas; high industry coping costs, with over 60 percent of Indian firms relying on captive or back-up generation; limited grid supply infrastructure and capacity for interregional trade; poor maintenance of state distribution systems resulting in an inability to meet demand; power shortages driven by insufficient new capacity and rehabilitation of existing capacity needs; weak utility governance; unpredictable fuel supply and costs, particularly for gas; and, the important contribution that reliance on indigenous coal-based generation and small inefficient and polluting back-up generators during supply shortages was making to India's carbon emissions. These issues, and growing concerns about energy security and the high costs of energy imports, caused Indian authorities to evaluate measures aimed at reducing non-essential or inefficient energy consumption, as captured in the country's Integrated Energy Policy (2006).

At the time of the project's development, the Government had already put in place a broad legal and policy framework for the power sector that included ambitious targets for provision of universal access to reliable and good quality power, while also highlighting the urgent need to mitigate power shortages and achieve financial viability in the electricity sector. India's coal-fired installed generation capacity at the time represented more than 50 percent of total capacity and contributed in the order of 80 percent of total generation, though a significant proportion of the existing coal-fired power plants were not operating efficiently. Coal-fired generation plants also figured as part of the country's planned capacity mix, which also included renewables such as wind.

Supported by an IDA loan and a GEF grant, whose focus on generation of global environmental benefits targeted the GHG reduction aspects of the project, one component funded EE renovation and modernization pilots for old coal-fired power generation capacity to demonstrate viable EE rehabilitation approaches. The approach used went beyond the practice typical in India of focusing solely on restoring original generation capacity, life-extension, and improving availability, by also modifying, or where necessary replacing, certain equipment and systems to enable units to operate with higher fuel efficiency. The project's other component focused on provision of technical assistance, specifically in providing support during implementation of the EE R&M pilots, supporting the development of a pipeline of EE R&M interventions, addressing barriers to EE R&M projects,

and strengthening the institutional capacity of implementing agencies for improved O&M practices.

The project intervention has worked to inform and remove barriers to rehabilitation in a series of pilot states through analysis and preparation of studies, backed by international experiences, a robust policy/regulatory dialogue and the strengthening of institutional capacity. Part of this effort has targeted the mobilization of qualified contractors to bid on the EE R&M opportunities supported by the project, as well as demonstrate effective and replicable R&M approaches. Given the significant demand/supply gap faced by the sector, an important aspect of the project's work focused on demonstrating how rehabilitation of older coal-fired power plants could serve to augment power availability on competitive terms. The overall environmental performance of plants, including particulates emission, water treatment, ash disposal and overall safeguards practices and policies, areas that do not always attract adequate attention on the part of state utilities, was also systematically improved. Institutional capacity in the areas of design and execution of R&M projects, and efficient plant O&M was strengthened. Improving the EE of selected coal-fired power generation units through these inputs is generating co-benefits from reduced greenhouse gas emissions per kilowatt hour of electricity generated.

INDIA SUSTAINABLE URBAN TRANSPORT PROJECT

Fostering long-term sustainable urban transport is a priority for the Government of India and is the objective that lies at the genesis of the *Sustainable Urban Transport Project*, supported by IBRD resources and GEF grants implemented by both the WBG and UNDP. The SUTP, which directly supports India's National Urban Transport Policy (NUTP), has been designed to build capacity and promote environmentally sustainable urban transport in India, as well as to improve the usage of environment-friendly transport modes by undertaking a series of city-level demonstration projects which aim to induce major change in urban transport in India. The project is working to achieve this objective by supporting the implementation of the NUTP, specifically those aspects of the policy that emphasize the priority use of public and non-motorized transport, as well as those that target the broad need to build capacity to develop and implement sustainable transport systems at both local and national levels. In this regard, innovative sustainable urban

transport systems have been designed and are being delivered in five demonstration cities, and the project is supporting the training and professional development of transport professionals, and has produced manuals and guidelines for urban transport institutions, systems and design processes.

Provision of support for the implementation of measures that improve public and non-motorized transport enhances the accessibility of the urban poor; while capacity building and technical assistance help underpin the local governments' ability to effectively manage public transport service delivery in the long term. The results being generated by the project provide very positive visibility to the efforts of the NUTP. This is expected to help facilitate a shift toward sustainable urban transport policies and programs at the state and local level in India in future.



INDIA UTTARAKHAND DECENTRALIZED WATERSHED DEVELOPMENT PROJECT

The *Uttarakhand Decentralized Watershed Development (SLEM) Project* was developed as a complement to India's IDA-financed Uttarakhand Decentralized Watershed Development Project (UDWDP). Specifically, the project aimed to scale-up and mainstream the outcomes achieved under the UDWDP, with the goal of enhancing watershed sustainability by restoring and sustaining ecosystem functions and biodiversity while simultaneously enhancing income and livelihood functions, while generating lessons learned that could further be scaled-up and mainstreamed at state and national levels.

The project worked to control land degradation through the sustainable land and ecosystem management (SLEM), as well as to improve local livelihoods. The range of areas of intervention that the



project engaged in included: soil conservation, forest regeneration, pasture and silvi-pasture development, reversal of soil erosion, vegetative barriers, fire management, water augmentation, scale-up of briquette making to meet local energy needs and improve income potential, and biodiversity conservation through domestication and cultivation of medicinal and aromatic plants. As the results demonstrate, the pairing of the UDWDP and SLEM initiatives under a multi-activity umbrella generated positive, synergistic outcomes in terms of both environmental services and livelihood benefits.

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- Twenty (20) micro-watershed management plans, principally focused on reserve forests, were developed and implemented.
- An overall area of 234,787 ha received resource conservation treatments by adopting decentralized watershed management.
- The treatment of 167,556 ha of non-arable lands using soil conservation reduced runoff and soil erosion, the outcome of which was an estimated 142,438m³ of soil loss reduction, which in turn protected topsoil on 185 ha and increased gross cultivable land to 278 ha.
- The projects' interventions contributed directly to rehabilitate dried up stream sources and capillary-based water springs through the establishment of rainfall runoff capture and infiltration ponds at strategic locations throughout the watersheds. The additional water retained at higher levels of the catchments resulted in an approximate increase of 68 percent in water discharge rates.
- The water harvest structures developed by the projects created additional water holding capacity of 671,536 m³, resulting in 9,402 ha of arable lands receiving irrigation thanks to project intervention.
- Improved varieties and high value crops were cultivated in 7,464 ha, crop yields from arable lands increased from 35 to 60 percent, and the annual

production of cereals rose by 79 MT, while that of pulses increased by 2 MT.

- Small timber and fuel wood plantation and fodder development that received support from both projects increased biomass production on 17,475 ha in the targeted areas and plantations increased annual production by approximately 121 MT.
- Some 4,500 beneficiaries, representing a 50 percent increase, engaged in alternative livelihood activities, such as pine needle briquetting, gharats (traditional water mills), biogas, and medicinal and aromatic plant cultivation.
- Agribusiness initiatives were piloted in 327 of the project sites and 27 farmer federations, representing 8,408 farmers, were formed. In turn, these federations facilitated the sale of 41 MT of high value crops, off-season vegetables, and processed farm products in 19 facilities financed under the project, generating total sales volume of Rs. 486 million (about \$ 9.7 million).
- The number of farmers participating in the processing of farm products totaled 6,743, 42 percent of whom were women.
- The participatory approach and capacity building activities promoted under the projects, including training, exposure visits, knowledge management, and participatory monitoring and evaluation helped increase substantially the participation by women and vulnerable households. Facilitated by women village motivators, the engagement of women increased from 11 to 45 percent, while that of vulnerable households doubled.

SRI LANKA RENEWABLE ENERGY FOR RURAL ECONOMIC DEVELOPMENT (RERED) PROJECT

In the late 1990s, some 70 percent of Sri Lanka's households, principally those in the country's rural areas, were not connected to grid electricity. A pressing reality was that the use of traditional grid-based approaches to meet rural electricity demand by extending power lines to dispersed populations was prohibitively expensive, moreover the growing need to increase imports of petroleum products contributed to a significant trade deficit. These considerations spurred interest on the part of the government to identify cost-effective renewable alternatives, such as solar photovoltaics and off-grid micro-hydro plants to meet increasing demand.

In response to this growing need, the Sri Lanka Renewable Energy for Rural Economic Development

(RERED) Project was developed to follow-up on to the successful WBG-funded Energy Services Delivery (ESD) Project that had been in implementation from 1997–2002. The ESD project put in place a credit program to encourage private sector provision of renewable energy services, thereby providing medium and long-term financing to private sector firms, NGOs and cooperatives for renewable energy investments. The project was supported by IDA financing and a GEF grant.

The aim of the RERED Project, whose implementation was extended through 2011, was to expand the commercial provision and utilization of renewable energy resources, with a focus on improving the quality of life in rural areas through the use of electricity as a means to further income generation and social service delivery. The GEF-specific objective sought to reduce atmospheric carbon emission by removing barriers and reducing implementation costs for renewable energy, and removing barriers to energy efficiency.



The project worked with stakeholder ministries to apply energy solutions appropriate to their sectoral strategies and goals. This included identification and promotion of opportunities where provision of energy services such as electricity, modern sources of thermal energy and energy conservation would have a significant impact on rural income generation and social development.

RERED achieved a number of notable successes. It supported the emergence of a sustainable industry which today develops finances and maintains energy delivery systems. Commercial banks have continued to lend to private developers, overcoming the

obstacles that used to plague attempts to secure financing, or imposed much higher costs, due to perceived risks associated with small-scale privately developed infrastructure projects in the county and/or the usually high capital cost of such investments.

The project directly supported the installation of about 185.3 MW of grid-connected renewable energy sub-projects including, 2 wind projects (19.8 MW total capacity), 1 biomass project (1 MW capacity) and 68 mini hydro projects. Indicators specific to the GEF grant's use involved avoiding emissions of 1.25 million tons of CO₂ and promoting adoption of renewable energy by removing market barriers, and reducing implementation costs. The total electricity generation from RERED-financed sub-projects at the time of project completion in 2011 was 422.5 GWh. The resulting avoided emissions of sub-projects that had been commissioned by that time 1.84 million tons CO₂ equivalent, which surpassed the project target by 47%. In addition, the removal of market barriers was in evidence given the additional installed capacity of grid-connected renewable energy from all investments in the sector.

All told, RERED provided 116,795 households access to electricity. For many of the families living in the areas of project intervention, this first time access to electricity was considered a life-changing event. Although improvement in family incomes was limited, significant benefits in quality of life were gained through better lighting, enabling children to study longer in the evening hours, facilitating the work of women and improving family and community relationships. Improved domestic lighting played a significant role in improving the quality of life of beneficiaries. Many villagers described the access to improved lighting to be “a reawakening of their lives,” a dream they never thought would have been realized.

INDIA PARTIAL RISK SHARING FACILITY IN ENERGY EFFICIENCY

The Indian economy is growing at about seven percent and despite the fact that the country's power sector has also been growing, in the double digits, India nevertheless faces significant power shortages that are expected to continue in the foreseeable future. The government is therefore, looking to additional supply-side and demand-side resources, such as renewable energy and energy efficiency (EE), to help meet the country's significant power deficit and diversify the generation portfolio mix.

The Government of India's Expert Group on 'Low Carbon Strategies for Inclusive Growth' and other technical studies, undertaken by leading independent agencies in India and abroad, have suggested that huge potential exists for electricity savings to be achieved through EE. Some of the biggest barriers to wider adoption of EE measures involve a lack of understanding by financial institutions of EE technologies, the scarcity of commercially-proven EE technologies in the market, the lack of a developed market for energy service companies (ESCOs), and the high discount rates that decision-makers apply to EE investments due to their high current capital costs and uncertainty over future returns.

ESCOs, or performance-contracting companies, play a crucial role in identifying and harnessing potential energy savings. They are third-party private enterprises that implement technological, process-linked and managerial improvements that reduce energy consumption in industrial and commercial firms. ESCOs either make the investments themselves, thereby assuming both the credit and technical performance risks, or, for a lower fee, take only technical risks and guarantee performance while deploying EE technologies and/or processes in host institutions. Due to the inherently technical and capital-intensive nature of the services provided, ESCOs require their own financing to increase their market penetration. In India,

this type of long-term financing is currently largely unavailable from commercial lenders.

The *Partial Risk Sharing Facility in Energy Efficiency Project* that is currently under development will seek to achieve energy savings by mobilizing private sector investment in India's EE industry. One avenue that will be pursued is mobilizing commercial financing by offering risk-sharing mechanisms supported by the project's GEF financing and leveraged from the CIF Clean Technology Fund (CTF). Another area of focus is catalyzing ESCO-implemented EE projects by providing complementary technical assistance and capacity building to stakeholders in India's EE market.

The project will also initiate a risk-sharing facility fund, as well as technical assistance, for partner commercial banks and other agencies to encourage development of low carbon lending tools. Included in the fund will be technical assistance and this expanded capacity building to various project stakeholders will lay the groundwork for preparation of codes for the energy savings performance contracting market, including associated monitoring and verification (M&V) protocols. In this manner, commercial banks will be incentivized to increase access to finance to ESCOs who in turn, will be in a position to invest in projects to reduce energy consumption in large industry, small and medium enterprises and commercial buildings.









Harmonizing for Enhanced Efficiency

Partnership is key to the GEF. Indeed, it defines the GEF's very foundations. Beginning with the launch of the Facility's pilot phase in 1991, which was established by the World Bank Group in collaboration with the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP), the partnership has grown today to more than 10 implementing and executing agencies and is poised to continue to expand, following the initiation, in May 2011, of a pilot program for accreditation of new agencies.

The WBG welcomes renewed efforts in GEF 6 on a needed revitalization of the GEF partnership. The fifth GEF Overall Performance Study (OPS 5), recently conducted by the GEF Independent Evaluation Office (IEO), concluded that the partnership is under

The WBG-GEF project cycle harmonization initiative is an example of how the WBG-GEF Program is tackling new approaches.

considerable pressure due to increased transaction costs, the drive for cost-effectiveness and a limited resource envelope. Streamlining measures associated with the GEF project cycle, under implementation since January 2013, have been in response to this. The OPS 5 has recommended an overhaul of the GEF Business Model which would require that a fresh gaze be cast on current roles and responsibilities, as well as on the need for more innovation and risk in process management.

The WBG-GEF project cycle harmonization initiative is an example of how the WBG-GEF Program is tackling new approaches. Since December 2012, the GEF and the WBG began a major streamlining of each organization's project cycle that aims both to add strategic value to the portfolio, and to reduce project processing technical inefficiencies. In

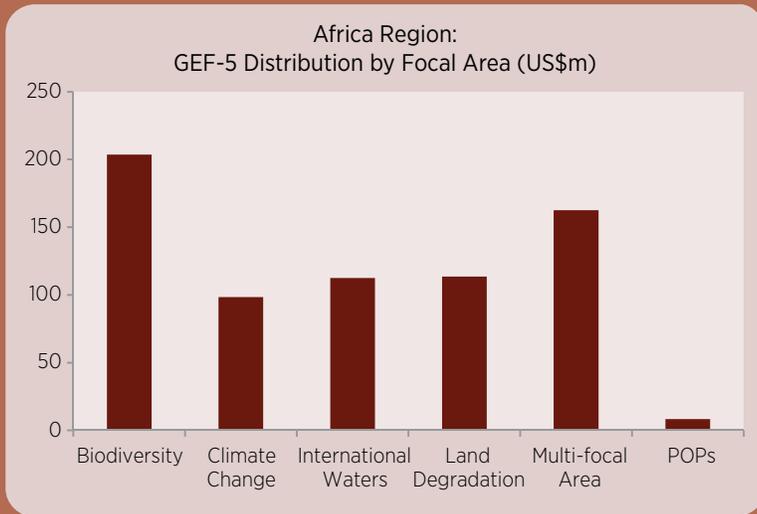
practice, it means that project review processes are more effective and interactive, thanks to improved synchronization of the review and decision stages of the WBG and the GEF. Recipient countries and WBG teams are faced with less duplication in documentation through simplification of GEF templates and, more upstream consultation and interaction on the part of the GEF Secretariat staff is taking place with project task teams during project design and preparation. Initial experiences with this pilot suggest that inter-agency coordination has become smoother and allowed for more constructive exchanges among the partners on individual projects.

The WBG-GEF harmonization ‘pilot’ on project cycle simplification represents a good first step. However, as pointed out by a WBG evaluation office Global Program Review (GPR) on the WBG’s partnership with the GEF, momentum for further streamlining reforms calls for greater trust and reliance on agency systems as essential (IEG 2013), a view supported

by WBG senior management. The drive for simpler and easier access to financing is underscored by the WBG’s Change Roadmap. To meet the demand for quick and efficient access to expertise, services and financing, the WBG is redesigning its delivery model and redefining its approach to operational risk. Our internal structures and processes are evolving to make the new way of doing business called for by OPS 5 and the WBG’s evaluation body a reality.

More GEF responsiveness on the urgency and depth of reform is essential for an efficient GEF-6. Continued changes are needed in the way we do business to make GEF efficient and improve its image as a champion of speed and nimbleness. The emphasis in GEF-6 on innovation and transformation in the pursuit of global environmental benefits can only succeed if matched by corresponding innovation and transformation of its systems, supported by operations that aim to generate those results.





AFRICA Portfolio Highlights

- Programming of \$698.7 million
- Activities underway in 34 countries, as well as 26 at either regional or sub-regional levels
 - » 62 active projects (1 implemented by IFC)
 - » 47 projects closed during the period (1 implemented by IFC)
 - » 9 new projects under preparation

SUB-SAHARAN AFRICA

WEST AFRICA REGIONAL FISHERIES PROGRAM (WARFP)

The fishing sector is of crucial importance to West Africa's coastal countries, employing 3 million individuals and generating an estimated \$2.5 billion in revenue from fish legally captured each year in the region's waters. However, illegal trawling, often by foreign ships has a punishing effect on local economies: it damages the nets and boats of villagers, destroys the seabed breeding grounds of many fish, depletes regional fish stocks and, robs the countries of wealth generated from their fisheries. Yet regional governments often lack effective tools to combat poaching. Better enforcement of existing policies and stronger regulations to effectively manage marine fish resources are needed. Another challenge is that coastal communities in general, lack basic port and processing infrastructure that allow for industrial vessels to land and process fish locally. Taken together these constraints contribute to slow regional development.

The *West Africa Regional Fisheries Program (WARFP) Project* is successfully piloting a model for sustainable harvesting one of the largest natural resources in Africa. The project, which is currently implemented in six countries across West Africa — Cape Verde, Ghana, Guinea-Bissau, Liberia, Sierra Leone and Senegal — is funded by IDA resources complemented by GEF grants. The project directly supports

employment, food security, trade and economic growth through regional integration. WARFP's focus is to instill better management of the region's rich fish resources through a combination of regional cooperation, national reforms and local education and empowerment.



The program is similar for each country, and is based on four components: good governance of fisheries, reduction of illegal fishing, increased contribution of fish resources to local economies, and regional coordination. The GEF-funded portion supports development of new policies, laws and relevant institutions for rights-based fisheries, institutes a program of registration and licensing of all fishing vessels, empowers communities to effectively manage resources, and provides training and access to micro-finance for transition to alternative livelihoods in zones of overexploited fisheries. Country-level activities are tailored to the individual needs of each country, while best practices and common goals are shared amongst the countries.

The Sub-Regional Commission on Fisheries (CSRP) of West Africa implements the project, which ensures client buy-in and helps harmonize the long-term policies of each country with the program.

At the national level, the WARFP team works closely with ministries of fisheries to support legislation that increases illegal fishing surveillance, supports conservation and protects the rights of artisanal fishermen to manage their fish resources sustainably.

Results to date are very positive. In Cape Verde, two communities have developed their own fishermen's association that works to protect fishing zones for locals. The communities, local government, and maritime police have also collaborated to register fishing boats systematically to help crack down on illegal fishing. One of the community's is investing in an ice factory that will allow fishermen to fish longer, as well as reach more distant markets, thanks to cold storage. In Liberia, the incidence of illegal fishing has been reduced by 83%. In Ghana, the Fisheries Commission has recently published a list of all industrial and semi industrial licensed vessels, making it possible for any stakeholder to determine if a vessel is legal, and heralding a significant change in fisheries governance in the country.

In addition to the support the project provides to weed out illegal fishing, it is demonstrating positive results as it works to assist countries to build more sustainable and profitable fisheries through governance reforms focused on limited and secure access rights, stakeholder empowerment, transparency and a strong enabling environment for business. Building on this, the development of infrastructure and skills to boost private investments to secure greater value-added locally, will allow countries to capture a bigger share of the returns on healthier fish stocks.



FIGHTING AGAINST WILDLIFE POACHING AND ILLEGAL TRADE IN AFRICA

Many countries in Africa are facing a worrisome surge of wildlife poaching and illegal trade which threatens to undermine the financial, social and economic capital of communities and undermine national security. Elephant poaching for example is escalating at alarming rates, with about 35,000 elephants killed in 2012 and 2013 alone. The remaining global population of Savanna Elephants stands at approximately 500,000, while only about 30,000 Forest Elephants remain. Recent publicity has highlighted the problems that come to communities from the slaughter of hundreds of elephants in raids by well-armed and well-equipped gangs — and the situation is getting dramatically worse by the day because of the \$8-10 billion annual market for these poached animals.

With seed funding provided by a GEF medium-size grant of \$2 million, the WBG has launched an 18-month regional project to enhance a shared understanding of current trends in elephant poaching and illegal ivory trade in Africa, including economic drivers, and develop a regional collaborative platform, supported by a coalition of partners, to combat the problem. The project is working to help make the economic case for why anti-poaching efforts should be a priority, including analysis of the value chain of supply and demand for ivory, and assessment of the impacts on legal trade, economic development, national institutions, and financial and judicial

systems. It also seeks to build strategic alliances to combat African elephant poaching and illegal ivory trade and, it initiating African elephant anti-poaching emergency activities. This work is expected to feed, with the advent of GEF-6, into the development of a pan-African program of action to turn the tide on species and habitats loss to be supported by the WBG, the GEF and other donors.

BURUNDI SUSTAINABLE COFFEE LANDSCAPE PROJECT

In Burundi, the most pressing environmental problems are linked to deforestation driven by mounting population pressure that is accelerating agricultural land clearing and making fertile lands even scarcer. These actions in turn spur bush fires, exploitation of marshes and other wetlands, and poor management of agricultural lands, principally due to inappropriate farming practices.

Coffee, the country's primary export crop, typically accounts for more than 60 percent of all of Burundi's export earnings: in 2011, coffee export revenues accounted for 3.3 percent of GDP. In the order of 2.3 percent of the total land area in Burundi is under coffee cultivation, and some 600,000 households, out of 1.2 million total, depend on coffee farming for their livelihood. These rural families rank among the poorest in the country. Coffee washing, drying, grading, storage, and other processing steps therefore, present a significant source of employment and income. Yet unsustainable and unregulated coffee production also contributes to land degradation and poor water management. The use, by coffee farmers, of marginal lands on steep slopes, and the elimination of tree cover on hillsides has contributed to degradation of land, biodiversity loss, and expansion of the agricultural frontier into important protected areas. In addition, solid and liquid organic waste from the de-pulping of coffee cherries at coffee washing stations is a major source of water pollution.

The *Sustainable Coffee Landscape Project* will support the government's efforts to promote sustainable land and water management on the country's coffee farms in Bubanza, Bururi, and Muyinga provinces. Shade-grown coffee that promotes coffee cultivation and a planting approach that mixes coffee with various trees and plants such as beans and maize will be piloted. Practiced in other countries, including Colombia and Ethiopia, shade-grown coffee production techniques improve watershed health and help

to conserve biodiversity, while in tandem, increasing resilience and offering coffee growers protection from price volatility. The project will also offer training to improve agronomic practices for increasing coffee production, to reduce water pollution at bean-washing stations through the use of more modern water-efficient equipment, and to support coffee marketing and certification schemes and introduce landscape approaches that combine conservation with eco-tourism. In addition, the project will provide farmers hands-on training using new sustainable land management techniques that improve long-term productivity, such as mulching, inter-cropping, pest-management, and methods appropriate for small-scale farming such as terraces, ponds and underground cisterns. To stem encroachment on protected areas, funding will also be used to strengthen protection and management of the globally-significant Bururi Natural Forest Reserve (BNFR), including support for patrolling equipment, law enforcement, and training and environmental education activities.

To support learning, a South-South Knowledge exchange on coffee landscapes was organized by the WBG in early 2014 with a focus on enhancing stakeholder understanding and organizational skills associated with shade grown coffee programs. The exchange was hosted in Colombia by the National Coffee Federation and included visits to farms, research stations and demonstrations sites in several towns in the country's main coffee region. The initiative offered a unique opportunity to witness results and interact with individuals engaged in functioning shade grown coffee cultivation, as well as on coffee farms that have established agroforestry systems. The study tour successfully helped raise awareness regarding the social, economic and environmental benefits of shade, biodiversity friendly coffee cultivation following a landscape approach.

GABON SUSTAINABLE MANAGEMENT OF CRITICAL WETLANDS ECOSYSTEMS

Gabon is renowned for its exceptional biodiversity. The country belongs to the Congo Basin rain forest ecosystem, which is the world's second-largest area of contiguous rain forest, and features rich faunal and floral wildlife and a variety of landscapes, including an 800-kilometer coastline marine ecosystem. Three terrestrial eco-regions are found in Gabon: the Congolian Coastal Forest, the Northwestern Congolian Lowland Forests and the Western Congolian Forest-Savanna Mosaic, all of which are

defined by the World Wildlife Fund (WWF) as the world's most outstanding examples of each of these major habitat types. The country is also home to significant stands of central African coastal mangroves, to patches of Congolian-Zairean swamp forests in the northeast, and to several priority freshwater systems.

For over a decade, Gabon has worked to expand its areas under protection. In 2002, it created a network of 13 national parks covering 28,371 km², representing 10.6 percent of the country's surface area. The Agence Nationale des Parcs Nationaux (ANPN) was created to manage all 13 parks. An earlier WBG-GEF-funded project, 'Strengthening Capacity for Managing National Parks and Biodiversity', helped define the roles and operational modalities of the ANPN, contributed to building the agency's fiduciary, M&E and HR management systems, and supported the uptake of sound management practices in three Parks which were then extended across the entire park network. Important progress was made in preserving biodiversity both within the parks and in immediate buffer zones, yet biodiversity management outside the parks system network remained a challenge, particularly with respect to wetlands, which provide major ecosystem services but were often overlooked. Since Gabon's wetlands ecosystems are critical for the provision of drinking water in major urban centers, energy production and in sustaining fisheries production, further action was required.

The *Sustainable Management of Critical Wetlands Ecosystems Project* for Gabon will work to enhance protection of biodiversity of selected forested wetlands that figure on the Ramsar List of Wetlands of International Importance through knowledge creation and the development of appropriate conservation measures for sustainable wetlands management. Knowledge will accrue as a result of monitoring of selected critical wetland ecosystems which will enable Gabon to set up a reliable monitoring system to produce early warnings on potential alterations of wetland ecosystems.

Another critical part of the project includes support for sustainable management of selected critical wetland ecosystems. A third component will strengthen the institutional framework in order to better support wetlands management. This features a design that complements the sustainable management of the Wetlands of International Importance (used interchangeably with 'Ramsar wetlands' in Gabon at both the national and local levels. Finally, the fourth component includes tailored project management,

monitoring, and evaluation (M&E) which looks to support the overall daily administration of the area to ensure that regular M&E is carried out and that results are fed back into decision making on project implementation.

GHANA URBAN TRANSPORT PROJECT

More than half of Ghana's 25 million plus population lives in urban areas, with about 10 percent inhabiting the country's capital, Accra. In the two decades leading up to the development and approval of the *Ghana Urban Transport Project*, which started in 2007, Accra's population had doubled and its built-up area had expanded nearly three-fold, increased from 133 sq. km in 1990 to 344 sq. km by 2005. This expansion made it difficult for municipal authorities to meet the service demands of the city's residents. This negatively affected Accra's residents, particularly the most vulnerable sections of society given their dependence on public systems for provision of water, electricity, transport, and other services. Similar problems affected Ghana's second largest city, Kumasi.

Urban transport in Accra and Kumasi is characterized by chronic unmet demand, compounded by an inability to attract sufficient new investment to redress supply shortages. Overcrowded buses and long wait times are endemic despite the proliferation of taxis and tro-tros (mini buses). In addition, the low productivity potential of such capital assets in highly congested traffic also acts to deter investment in high volume, reliable buses.

The *Ghana Urban Transport Project* was initiated in response to the critical importance that transport services and infrastructure play in enabling economic growth and poverty reduction. Funded by IDA resources, supported by a grant from the French Development Agency (l'Agence Française de Développement) and a GEF grant, the project is supporting improvement of mass transport services and mobility within the Greater Accra Metro Area (GAMA) through a combination of measures including traffic engineering, management improvements, regulation of the public transport industry, and implementation of an efficient and affordable Bus Rapid Transit (BRT) system that will be piloted in Ghana's two largest cities: Accra and Kumasi. The GEF grant specifically promotes a shift to a more environmentally sustainable urban transport mode by encouraging lower transport-related GHG emissions along Accra's pilot BRT corridor.

A number of critical actions towards introducing higher level bus services on selected corridors have been achieved so far: the Greater Accra Public Transport Executive (GAPTE), a planning and regulating entity, has been established. Three bus operating companies also have been created, and have engaged in advanced discussions with both bus manufacturers regarding the purchase/lease of buses, as well as with the GAPTE regarding allocation of routes.

SAHEL AND WEST AFRICA PROGRAM (SAWAP) IN SUPPORT OF THE GREAT GREEN WALL INITIATIVE

Small-scale farmers across the Sahel and West Africa have long coaxed seemingly unproductive lands into robust and reliable sources of livelihood. The Sahel and West Africa Program (SAWAP) in Support of the Great Green Wall Initiative is working to harness the successes gained to date and expand best practices through adoption of community-based sustainable land and water management (SLWM) practices in targeted landscapes, especially climate vulnerable areas in West African and Sahelian countries to build climate resilience and food and water security.

The Program represents an investment of \$1.1 billion financed by IDA, the GEF, and other trust funds. SAWAP builds on the experiences developed under the TerrAfrica Partnership Program on Sustainable Land and Water Management led by the New Partnership for Africa's Development (NEPAD). It leverages TerrAfrica partnerships and benefits from the knowledge of its partners, their investments, and the harmonization of efforts promoted by this coalition. The program's innovative framework positions



Africa to lead the way on tackling sustainable land and water management in a changing climate.

SAWAP encompasses 12 discrete country projects in Benin, Burkina Faso, Chad, Ethiopia, Ghana, Mali, Mauritania, Niger, Nigeria, Senegal, and Sudan, and Togo, through application of various points of entry including, land management, biodiversity conservation, water resources, sustainable forest and disaster risk management, agri-business, and food security. Specific objectives include increasing land area with SLWM practices, changing vegetation cover, imbuing institutions with increased adaptive capacity, and witnessing changes in carbon accumulation rates in biomass and soil. By treating landscapes as portfolios of renewable assets and applying smart management, the program is working to secure more food, fiber, freshwater, and firewood while in tandem, protecting natural resources in the face of climate variability and change. The investment is expected to yield sustainable management of natural resources of up to 2 million hectares of cropland, rangeland, and dryland forest ecosystems in participating countries, protect threatened dryland biodiversity against erosion and desertification, and generate the potential for sequestration of 0.5 to 3.1 million tons of carbon per year.

A regional project, the Building Resilience through Innovation, Communication, and Knowledge Services (BRICKS) Project, ties the projects together by providing technical assistance to regional centers of excellence including, the Interstate Committee for Drought Control in the Sahel (CILSS), the Sahara and Sahel Observatory (OSS), and the International Union for the Conservation of Nature (IUCN), to facilitate technical knowledge exchanges and monitor services

among the 12 country investment operations in the broader portfolio level.

Sustainable Natural Resource Management and Resilient Landscapes in Ethiopia (under SAWAP)

Ethiopia’s diverse production landscapes and natural resources provide a range of resources to its rural poor including, fresh water, crops, timber and firewood. However, these natural resources and landscapes are increasingly subject to persistent land degradation that damages the hydrologic cycle, reduces the availability of forest products, and reduces agricultural productivity. The cost of land degradation in Ethiopia is estimated to be at least 2–3 percent of agricultural GDP. Enhanced sustainable management of natural resources and landscapes can help support prosperity and contribute to poverty reduction.

The *Sustainable Natural Resource Management and Resilient Landscapes project (SLMP 2)* supports the country’s efforts to reduce land degradation and improve land productivity in selected watersheds in six regions. The project contributes to the Government of Ethiopia’s flagship Sustainable Land Management (SLM) Program and builds on the results of an initial IDA and GEF financed sustainable land management project, strongly participatory in nature, that identified degradation factors and impacts, planned and designed appropriate soil and water conservation technologies and, facilitated community-led implementation of improved practices and infrastructure, such as terraces, re-vegetation, and check dams. SLMP-1 contributed significantly to the

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introduction of best-fit and tested sustainable land and water management practices. At completion, nearly 100,000 rural households had benefited from project outputs and outcomes, and over 200,000 hectares of land that had once been degraded, uneconomical and unproductive were rehabilitated.

SLMP 2 will support implementation of the government’s broader SLM program which includes, replication of the successful technologies identified in the first phase in 90 additional watersheds, promotion of climate smart agriculture, and supporting income generation and value-added activities in 135 watersheds. The project will be implemented in 135 watersheds/woredas (including the 45 watersheds that were partially supported by SLMP-1) in the Regional States of Amhara, Tigray, Oromiya, SNNP, Gambela, and Benshangul Gumuz. The project’s innovation rests in its emphasis on a multi-sectoral landscape approach that supports coordinated effort on land use, land management and land administration, an approach that will generate multiple benefits in terms of productivity improvement, resilience to climate risks, enhancement to natural wealth, diversity of livelihood opportunities, reliable water security and ultimately, poverty reduction to an estimated 1.9 million people.

The project’s objectives will be achieved through capital investments, technical assistance and capacity building for smallholder farmers in the watersheds and government institutions at the national and sub-national levels. Funding for the project includes a \$50 million IDA credit, complemented by a \$40 million grant from the Government of Norway and a \$13 million GEF grant.



Burkina Faso Third Community Based Rural Development Project (under SAWAP)

Located in the heart of West Africa, Burkina Faso is endowed with natural habitats such as gallery forests, sacred forests, nature reserves, and wetlands. Particularly notable sites include the Pics de Sindou, the Karfiguela Waterfall, the Sacred Dafra Pond, and the Tengréla Lake.

Many of these sites are threatened, as are many of the species native to this area including panthers, elephants, crocodiles, and pythons. Over the years, high pressure on the natural resource base and the environment caused rapid degradation. Deforestation alone claims an estimated 10,000 hectares per year. A World Bank-funded project focusing on lowland areas in selected sub-watersheds in Burkina Faso has demonstrated how communities can improve the productive capacity of rural resources

Building on results achieved during two previous project phases, the *Burkina Faso Third Community Based Rural Development Project* (CBRD-3) is working to consolidate a sustainable basis for decentralized rural development. The avenues being pursued include supporting the implementation of rural land tenure reform and enhancing local conflict resolution mechanisms, funding community-level and regional social, economic and environmental investments, and continuing to strengthen institutional development and build capacity to support sustainable land and forestry management. The more than 300 rural communities in Burkina Faso will benefit from these project interventions.

Financed by IDA resources, complemented by a GEF grant plus national and community-level funding, the project will work to ensure alignment with government policy on question of decentralization, rural development and land security by supporting village development councils (Conseil Villageois de Gestion des Terroirs) to continue to develop and implement annual investment plans. Active community involvement will be pursued, with emphasis on drawing in the poor and marginalized, to ensure that ownership and commitment to local development efforts is grounded in social cohesion and championed in the long-term. Funding will also support commune-level micro-projects that seek to address reforestation, agro-forestry, dry land and soil reclamation, river bank protection, watershed and lowlands management, as well as corridors management to ensure cattle access to pasture zones and water sites.

Success will be measured by measuring agricultural yields that should come from improving the status of the natural resource base in targeted areas. This will happen by applying sustainable land and water management practices to enhance soil fertility and vegetative cover, and increasing land area under cultivation, with the aim of generating higher rural household incomes. The project also targets expanding access to basic services for rural populations in project sites including primary school enrollment, access to health services and access to drinking water.

MALAWI SHIRE RIVER BASIN MANAGEMENT PROGRAM

Malawi's population is highly rural and the majority of those that live in these areas make their livelihoods from smallholder, rain-fed agriculture. While agriculture is the main source of Malawi's economic growth, it is also a major contributor to poverty, given the high level of subsistence farming that occurs. Over 70 percent of all farmers cultivate less than one hectare, and a significant number struggle to produce enough food to meet their families' consumption needs.

The Lake Malawi-Shire River hydrological system represents Malawi's single most important natural resource system, providing water for myriad productive purposes including, hydropower, agriculture, fisheries, transport, tourism, water supply (for both urban and rural areas), as well as various important environmental functions.

Issues related to population density and poverty have led to mounting human pressure on the environment and degradation of the Shire Basin's natural resource base, notably land and forests. Deforestation, due to exploitation of forests and woodlands for firewood and charcoal production, soil erosion and sedimentation stand as the most serious threats, as they also drive increased incidences of erosion, run-off and flash floods. High loads of sediment are also deposited in river beds, reservoirs and floodplain wetlands, affecting irrigation canals, fisheries and generation of hydropower. Certain tributaries pass through heavily cultivated areas, townships and cities, resulting in water pollution from agricultural run-off, and human and industrial waste that generates adverse impacts on human health and accelerates the growth of aquatic weeds. All told, water resources have increasingly been degraded due to catchment degradation,

unsustainable land use and management practices, and increased use of chemical fertilizers without complementary soil and water conservation measures, which has resulted in unhealthy silt loads and increased levels of sedimentation, eutrophication, biological contamination and effluents.

The Shire River Basin Management Program is financed by IDA and grants from the GEF and the LDCF. Conceived as a three phase program, its first phase is tackling the development of a planning framework for the Shire River Basin to improve land and water management for ecosystem and livelihood benefits in target areas. At the foundational level, the project is working to strengthen the institutional capacity and mechanisms for Shire Basin monitoring, planning, management and decision support systems. Project investments focus on strengthening water-related infrastructure, reducing erosion in priority catchments, protecting and enhancing the Basin's ecological services, improving agricultural productivity, flood management and livelihoods, and providing community level adaptation and mitigation support.

The project expects to directly improve the sustainability of roughly 2.9 million hectares of protected areas, forest reserves and floodplain wetlands. Its support for cross-sectoral basin planning and management will build capacity in the Department of Parks and Wildlife and the Department of Forestry. The adoption of community-based management within Forest Reserves in the lower Shire, based on a model developed nationally, is helping mainstream biodiversity conservation into landscape planning at both the basin and protected area cluster levels. LDCF funds channeled into the project support a broader community flood resilience program in the lower Shire floodplain, whose objective is to reduce vulnerability to extreme climate events by using integrated flood management to save lives and reduce damage. The total number of direct project beneficiaries includes some 430,000 people, 50 percent of whom are female.

SAO TOME Y PRINCIPE ADAPTATION TO CLIMATE CHANGE

The Democratic Republic of São Tome and Príncipe (STP) is a small island state with a fragile economy. Located 350 km off the coast of West Africa and with a surface area of 1,001 sq. km, STP is one of the continent's most isolated nations and is highly vulnerable

to exogenous shocks. Poverty is a widespread fact of life for most of the island's population of some 180,000.

The island's coastal communities and artisanal fishers are particularly vulnerable to the changing climate. Nearly 20 percent of the nation's workforce are employed in artisanal fisheries; some 2,000 people directly and an additional 18,000 indirectly. Easily 70 percent of the fishing vessels in use are small dug-out canoes of 3-4 meters in length with locals using paddles, sails, and traditional gear such as lines and nets. Less than 300 canoes are of fiberglass construction and motorized. Artisanal fishers navigate by visual contact with land or by clouds, generally at distances of 20 nautical miles from the shore. STP lacks a reliable early warning system which means that sudden squalls or dry fog can result in debilitating accidents or loss of life and, while its coastal villages have recently become more diversified due to easier access to land and growth of informal commerce, they have also become increasingly exposed to the effects of climate variability, in particular stronger river flooding and more fierce sea storms. The government therefore, prioritized the provision of navigation and safety equipment and the strengthening of its early warning system as part of its national adaptation program of action (NAPA).

The *São Tome and Príncipe Adaptation to Climate Change Project* seeks to increase the adaptive capacity of STP's vulnerable coastal communities to the adverse impacts of climate variability and change. The project is working along two investment tracks, one of which is developing coastal early warning systems and improving safety at sea by disseminating timely forecasts prior to extreme events. To support these objectives, safety equipment is distributed to fishers, training is provided on safety at sea and, community emergency preparedness is being reinforced. In tandem, the project is addressing coastal erosion and inundation by piloting participatory adaptation measures in vulnerable coastal communities, raising public awareness and implementing improved coastal resilience policies. About 8,300 project beneficiaries are active artisanal fishers who will benefit from training on safety at sea training and the establishment of the early warning system, a tool that will also serve pilot coastal communities tremendously. An estimated additional 63,500 people are also slated to benefit indirectly thanks to improved meteorological data and the early warning system.

ENHANCING INSTITUTIONAL CAPACITIES ON REDD ISSUES FOR SUSTAINABLE FOREST MANAGEMENT IN THE CONGO BASIN

The Congo Basin forest ecosystem is the world's second largest contiguous block of tropical forest on the planet, harboring extraordinary biodiversity and a high level of endemism. It forms an integrated ecological unit encompassing highly-forested territories of the Congo Basin countries which include, the Republic of Congo, the Democratic Republic of Congo, the Republic of Equatorial Guinea, the Gabonese Republic and the Republic of Cameroon, all of whom are Party to the Central African Forest Commission (Commission des Forêts d'Afrique Centrale – COMIFAC), the regional political and technical authority whose mandate is to guide, monitor and coordinate conservation and sustainable management of Central African forest ecosystems.

More than 24 million people live in the Congo Basin forest area, and most rely on it for their livelihoods. In all six countries, forestry is a major economic sector, generating jobs and local livelihoods from timber and non-timber products, which contribute significantly to both fiscal and export revenues. The Congo Basin forest also performs valuable ecological services, such as flood control and climate regulation at both local and regional levels. Given its abundant vegetation, the Basin's forests represent a considerable carbon stock, with the above-ground vegetation alone estimated to store 24–39Gt of carbon, serving as an important buffer against global climate change.

Building on an existing COMIFAC commitment to collaborate regionally on coordinating forestry issues, the *Enhancing Institutional Capacities on Reducing Emissions from Deforestation and Forest Degradation (REDD) Issues for Sustainable Forest Management in the Congo Basin Project* was approved to bring new opportunities to the fore regarding the conservation and sustainable use of forest resources. This is being done by strengthening country capacity on REDD issues and forest carbon stock measurements as well as by helping them prepare to take advantage of a future REDD+ mechanism. The UN-REDD program is a collaborative initiative that seeks to allocate a financial value for forest carbon stores by offering incentives for developing countries to reduce emissions from forested lands and encouraging investment in low-carbon paths to sustainable development. "REDD+" looks further to include the role of conservation, sustainable management of forests and enhancement of forest carbon stocks (www.un-redd.org).

The underlying rationale in tackling deforestation and degradation in the Congo Basin is there are multiple benefits such action will generate: in addition to conserving stored carbon, the project will conserve important biodiversity, provide a buffer to climate change impact, reduce and reverse land degradation, and ensure water services.

One project stream underway is improving and accelerating the uptake of knowledge and coordination on REDD at the regional level. Specific focus lies in facilitating exchange of learning and knowledge between the political and technical spheres, as well as promoting inclusive participation and representation of civil society in policy and strategy discussions at the regional level. These actions speak to one of the project's overarching principles, that is to build economies of scale that can be leveraged using a regional approach, in particular with respect to sharing technical advances and knowledge generated. Another component is building technical capacity for the measurement and monitoring of carbon stocks in the Basin's forests by setting up a scientific partnership to support this end. This element of the project is also contributing to the elaboration of specific algorithmic equations for the Congo Basin's forests to enable the countries to accurately report changes in forest carbon stock in future to tap into a results-based financial incentive system for REDD. The project also supports the mainstreaming of the REDD concept in sustainable forest management (SFM) Projects by working with REDD project developers to build their capacity, preparing methodologies and technical guidelines for REDD project preparation and implementation, and exchanging information and results.

LIGHTING LIVES IN LIBERIA

Liberia has been in a transition phase since 2004, slowly rebuilding civil wars, one result of which was devastation of the country's energy infrastructure.



Less than 0.6 percent of Liberia's urban population and virtually no rural residents have access to publicly provided electricity. The bulk of the country's population depends on unreliable and inefficient sources of energy including, small gasoline and diesel generators, firewood, charcoal, candles, kerosene, battery-powered LED torches and lamps, and palm oil. The WBG, along with a number of partners including the GEF, is working with Liberia's government and the national energy utility to restore the electricity supply with emphasis on expanding rural electrification in order to help balance development and growth beyond the capital of Monrovia.

In 2010, Liberia's Rural and Renewable Energy Agency (RREA) and a Rural Energy Fund (REFUND) were established with the specific goal of facilitating access to modern energy services for Liberia's rural areas. With the support of the WBG, the RREA launched a program that aims to provide affordable lighting for Liberians. This initiative, which goes by 'Lighting Lives in Liberia', is supported by the WBG IDA-financed Liberia Electricity System Enhancement Project (LESEP), which is complemented by the GEF-funded *Lighting Lives in Africa Project*, as well as financing from ESMAP. The project draws on the experiences of 'Lighting Africa', a GEF-funded initiative executed by the WBG's International Finance Corporation (IFC) that has facilitated access to modern, off-grid, portable, durable, inexpensive, safe, and clean lighting for 2.5 million people on the African continent (www.lightingafrica.org).

Lighting Lives in Liberia aims to improve and increase access to electricity in Liberia and reduce the country's greenhouse gas emissions when compared with its emissions growth baseline. The project is expanding options for power generation, supporting the enhanced delivery of distribution services, including for low-income households, and providing modern renewable energy services to off-grid users.

MOZAMBIQUE TRANSFRONTIER CONSERVATION AREAS AND TOURISM DEVELOPMENT PROJECT

The *Trans-frontier Conservation Areas and Tourism Development Project (TFCATDP)* represents the second phase of a larger-scale, 15-year Trans-frontier Conservation Areas (TFCAs) Program being supported by the WBG, whose objectives are to conserve biodiversity and natural ecosystems within three areas with significant transfrontier biodiversity

linkages - Limpopo, Lubombo and Chimanimani - TFCAs, by supporting the establishment and management of multiple-use conservation areas, and promoting economic growth and development based on sustainable use of their natural resources by local communities, with emphasis on ecotourism. Environmentally sustainable tourism development links the conservation and development objectives of the TFCAs by providing an economic alternative to unsustainable, destructive use of natural resources, as well as a direct economic incentive to maintain the natural ecosystems and their biodiversity. While the TFCAs span national boundaries, the program itself is national in focus and supports the government's participation in international agreements and commitments aimed at coordinating activities across national borders, as well as on-the-ground activities in portions of the TFCAs in Mozambique.

The project is working to increase the area, connectivity, and effectiveness of biodiversity conservation in the three TFCAs through implementation of the TFCA concept on the ground. It is financed by an IDA Credit which is fully blended with a GEF grant, as well as a grant from the Pacific Human Resource Development (PHRD) Trust Fund. The focus of this phase of the TFCA program includes: legal designation of TFCAs through adoption of regulations, criteria, procedures and institutional structures for planning, management and development; preparation and implementation of Integrated District Development Plans (IDDPs) in each TFCA, to provide an environmentally sustainable framework for land use planning, natural resource management, and development investment; developing environmentally sound and socially inclusive nature tourism that emphasized community/private sector partnership; and, improving the effectiveness of the PA networks within the TFCAs through improved management, rehabilitation, expansion, and the establishment of community reserves and conservation.

Good progress has been made during this phase of the program's implementation. Although not all works have been completed, Mozambique's new Conservation Law was approved in May 2013 and was passed by the Parliament in April 2014. The National Administration of Conservation Areas (Administração Nacional das Áreas de Conservação — ANAC) has been established, a director has been appointed and some staffing, by skilled technicians has occurred, though various related activities remain to be completed. Tourism activities also have been launched, TFCA technicians have benefited from technical

training, outreach has identified a company prepared to develop and produce tourism maps, and a public sector concessions manual is undergoing review.

BÉNIN COMMUNITY-BASED COASTAL MARINE BIODIVERSITY

Bénin's coastal zone stretches 125 km and 50-60 km inland, covering about 8 percent of the country's land area. Though small, it harbors 50 percent of the country's population and most of its economic infrastructure, making it of great economic importance to Bénin.

The ecological functions and the natural and biological processes that take place at the interface between the rivers, lagoons, lakes and swamps of the coastal zone on the one hand, and the marine areas on the other, make Bénin's coastal zone one of the most productive one the Gulf of Guinea. Fisheries play an important role in protein intake and food security, income generation and employment. The coastal zone is also the provider of key agricultural products, including export crops such as pineapples, palm oil, and banana. Significant quantities of local food products and non-food products collected from the zone's wetlands and other permanent and seasonal water bodies play important roles in home consumption and income generation for rural households, especially, the poor.

Bénin's coastal zone also harbors globally important and unique biodiversity assets given geological, topographic, and hydrological conditions, which combine to create a wide variety of ecosystems and habitats for rare animal species. Wetlands, lagoons, and rivers cover 40 percent of Bénin's coastal zone, and these water bodies encompass eight different ecosystems that provide irreplaceable ecological functions, and breeding, feeding and nurturing grounds for many fish species and other aquatic organisms. Together, these critical human, natural and economic assets made protection of the zone's production potential and its sustainable management of its resources a key priority for the government.

The Community-Based Coastal and Marine Biodiversity Management Project has promoted participatory conservation and sustainable use of biological diversity of coastal wetlands and marine resources through the establishment of viable community-based coastal zone management systems across a series of biodiversity priority sites. Its focus has been to develop an integrated approach to coastal wetlands and marine resource management

that supports and empowers local communities to establish and manage community-based biodiversity conservation areas (CBCA).

The participatory process applied engaged some 150 communities in the creation of CBCAs to preserve the biological diversity of various coastal wetlands. These are now rebounding as a result of sustainable use of the biological diversity of marine resources and environmentally friendly business activities. The active protection of mangroves, coastal zones, and forests helped begin to move these riparian populations out of poverty. Fish farming is now possible and allows them to meet their families' needs and educate their children. Communities and palm oil producer associations have realized the importance of preserving their forest, as they have reaped the benefits of income-generating activities derived from their conservation efforts.

To encourage residents to better manage these newly protected zones, training sessions were organized that covered marine and coastal resource conservation and management, tools and techniques for community-based natural resource management, community-based procurement, financial management of associations, planning, and monitoring of activities. Infrastructure for market gardening, fish farming and transport also were provided to enable beneficiaries to engage in income-generating activities, such as the production and sale of market products, salt trade, fish farming, fish processing and marketing, and palm oil production. Overall, communities have increased their production, expanded their businesses, and are generating profits and savings.

LIBERIA PROTECTED AREAS

Liberia's forests cover 4.4 million hectares, roughly 46% of its land area, and constitute by far the largest remaining tracts (43%) of the Upper Guinean Tropical Rainforest, a recognized hotspot for biodiversity which is considered a global priority for conservation. An enormously valuable environmental and economic asset, Liberia's forests house a range of important biodiversity including, some 240 tree species, 2,000 flowering plants, 125 mammal and 590 bird species, 74 reptiles and amphibians and over 1,000 insect species. Rural communities depend heavily on the forests for fuel wood, building materials, foods and medicinal plants, as well as a wide range of other non-timber forest products. Properly managed, Liberia's forests have great potential to contribute, in

a balanced way, to long-term, sustainable economic growth and employment, supporting the livelihoods of local and rural communities, and ensuring that their important national and global biological heritage is conserved.

Unfortunately, as often arises in situations of conflict, a country's natural resources pay a heavy price, and such was the case for Liberia's forests during the country's civil strife. In May 2003, sanctions imposed on Liberia by the UN Security Council in 2001 were extended to include a ban on timber production and export based on evidence that suggested that the country's forestry stocks were being vastly over-exploited and used primarily to finance the civil conflict.

To spur the lifting of the sanctions, an ambitious forests sector reform process was launched in 2004, led by the establishment of the Liberia Forests Initiative (LFI). This multi-donor platform, initiated by the Liberian Forestry Development Authority and the Government of the United States, brought together the WBG and a coalition of donor governments, lending agencies, nongovernmental organizations and civil society participants. The LFI supported a cross-cutting approach to forests sector reform through promotion of transparent, sustainable, fiscally prudent forest sector management, with a view to improving the livelihood of communities in forested areas. Its objectives included building local capacity for improved forest management, establishing sustainable policies and good practices, tracking revenues, supporting a "Chain of Custody" system to verify legal timber practices and creating a network of protected areas. Forest conservation efforts were promoted using what has come to be known as the "3Cs — commercial, community and conservation — forestry" approach.

The WBG has supported Liberia's forests sector reform through a variety of initiatives. GEF funding in particular, has allowed the WBG to provide critical support through three key projects. The Sapo National Park Project elaborated and adopted an effective park management process that conclusively established the basis for integrated biodiversity conservation and community development both in the Park and in its fringe communities. Furthermore, it set standards for protected area management in Liberia and beyond through its adoption of participatory and adaptive management practices. The Establishment of Protected Areas Network (EXPAN), which closed in GEF-5, secured the creation of a multi-use reserve and made progress

towards the creation of a new protected area in Gola. Second phase of the EXPAN project is now seeking to entrench sustainable community livelihoods around Liberia's protected areas.

SÉNÉGAL SUSTAINABLE LAND MANAGEMENT PROJECT

The livelihood of 70 percent of Sénégal's rural population—which equates to about half of the country's total population—depends directly on the land. Yet nearly two-thirds of the country's arable land is degraded, some 2.5 million hectares, and land degradation has increasingly affected the country's land resources which in turn, has impacted livelihood options and income-generating opportunities, thus exacerbating the poverty and vulnerability of the people. Land degradation has occurred primarily because of overgrazing and unsustainable agricultural practices, which have helped speed deforestation, but ancillary causes include population growth which has extended areas under cultivation and increased the pressure on forest resources. Soil fertility depletion is one of the main causes of stagnating agricultural productivity and, consequently, one of the major constraints to agricultural and economic growth.

The *Sénégal Sustainable Land Management (SLM) Project* worked to contribute to the reduction of land degradation and the improvement of ecosystem functions and services in specific target areas through the adoption of SLM practices. Many villages and communities benefitted. Over 20,000 hectares of land were recovered using SLM practices, which contributed positively to food security, income generation and improved living conditions, including better health and education. The improved soil fertility that resulted from adoption of the SLM approach translated into increases in production of target communities' main staples: millet production grew from 550 to 850 kilograms per hectare by containing the millet wild weed; rice production increased from 1,200 to 2,300 kilograms per hectare as a result of use of ground nut (peanut) shell as a soilless media; and, peanut production rose from 600 to 1,400 kilograms thanks to the use of organic fertilizer. Nurseries that were built for fruit and plant production and their associated gardening activities also had noticeably positive impacts on resident's nutrition in the short run.

The SLM project also made great strides with respect to gender equity by introducing dynamic changes at the grassroots level which by empowered

women to either purchase or request land ownership in their capacity as individuals or as a group. The introduction by the project of innovative technologies associated with activities that are usually the domain of women, such as fruit and tree planting, encouraged and heightened the level of involvement of females in agricultural production processes, which underscored the need for reform to the rules of land tenure. In addition, the fact that

the project diffused technologies that responded to women-specific needs, such as improved charcoal-saving stoves and biogas from manure, reduced the time women spend collecting wood and gave them more time to devote to productive activities. Equally as important, the 6,600 improved charcoal-saving stoves distributed to women added to the success in the fight against deforestation by reducing the pressure on natural resources.







Channeling ongoing achievements in GEF6

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The sixth replenishment of the GEF (2014–2018) has received pledges of nearly \$ 4.5 billion to support developing countries' actions to continue to advance the global effort to prevent degradation of the world's environment. In addition to the support the GEF lends to achieving the objectives of the UN Framework Convention on Climate Change (UNFCCC), the Convention on Biological Diversity (CBD), the UN Convention to Combat Desertification (UNCCD) and the Stockholm Convention on Persistent Organic Pollutants (POPs), under GEF-6 donors have agreed to contribute new financing to support the implementation of the 2013 Minamata Convention on Mercury.

GEF-6 offers the WBG-GEF Program the opportunity to build upon the wealth of knowledge and experience that has accrued in its more than 20 years' of work as part of the GEF partnership mechanism. The WBG-GEF Program will implement GEF-6 strategy and policy recommendations during this next cycle by delivering strong value proposition to client countries based on a proven ability to

GEF-6 offers the WBG-GEF Program the opportunity to build upon the wealth of knowledge and experience that has accrued in its more than 20 years' of work as part of the GEF partnership mechanism.

leverage diversified investment finance, attract other programs and partners to work collaboratively, promote innovation, and advance sustainable transformation and scale-up, all of which contribute to accelerated actions on the ground that fulfill commitments to the global environment and national development in a sustainable manner, ultimately responding to the goal of ending extreme poverty and boosting shared prosperity.

During GEF-6, the work of the WBG-GEF Program will therefore, continue to be:

Strategic. It will support GEF recipient countries in meeting global environment challenges where WBG involvement can make a difference, specifically given the capacity to innovate and leverage global environmental benefits at scale. Programmatic approaches will be deployed where agendas dictate that impact is best served by reaching across multiple countries and regions. Drawing in and on support from different resources and partners, the Program will continue to pioneer risk mitigation and the use of innovative financial products.

Effective. Independent evaluations have shown that the WBG has delivered the GEF projects with the highest impact, particularly in the climate change and ozone depletion focal areas. The Bank's role as a provider of catalytic finance and knowledge services to country clients will be enhanced through deliberate leveraging of private and public resources, as well as global knowledge to maximize impact and development results.

Collaborative. Success very much depends on strong client ownership. The WBG approach promotes tailored solutions that build on national priorities and systems from the bottom-up, in order to ground sustainability and impact. Our projects work with a wide variety of partners and rely on local capacity for execution of investments as a cornerstone to longer term ownership and sustainability. Bank teams work side by side with counterparts throughout the life of an investment, help trouble shoot issues that arise during implementation, and enhance impact through specialized expertise on the ground to adapt global experience and knowledge to local conditions.

Synergistic. WBG support in GEF-5 forged many synergies with other global programs to deliver multiple global environmental benefits. The GEF-6 Integrated Program themes will depend on the ability to work across sectors, boundaries and issues, one of the WBG's key strengths. The WBG's solid experience with integrated programming as it relates, for example to broader landscape approaches, climate smart agriculture and mainstreaming climate resilience, can be further expanded in GEF-6. One of the unique advantages of working with a large global development Bank is that GEF funding can be easily combined with any number of mutually beneficial initiatives, including many managed

in-house, such as the Global Partnership for Oceans (GPO), the Low-Carbon Livable Cities initiative, the Energy Sector Management Assistance Program (ESMAP), the Wealth Accounting and Valuation of Ecosystem Services (WAVES) initiative, the Water Partnership Program (WPP), the WBG Development Grant Facility (DGF), the International Development Association (IDA), IFC Advisory Services and the South-South Trust Fund, to name a few.

Efficient. The WBG will continue to maximize the harmonization of the project cycle with the GEF and support streamlining of processes and systems. The consideration of global environment concerns upstream during project and portfolio development will help clients by providing more timely and comprehensive support packages. By blending GEF project resources with IDA, IBRD and a range of other WBG managed funds, the Program will continue to benefit clients and remain one of the most cost-effective and impactful GEF agency programs.

Consolidative. The GEF Evaluation office's OPS5 report found that larger projects have more impact, which is an important finding in light of the trends during GEF-4 and GEF-5 that pointed in the opposite direction. Increased floors and flexibility to aggregate funds within the GEF's System for the Transparent Allocation of Resources (STAR) will be critical in GEF-6 to avoid fragmentation which reduces overall impact. The WBG-GEF Program will proceed more selectively in considering GEF funding in certain cases if adequate resources are not available to generate the impacts projected. Greater effort will also be required at country programming stages by all GEF partners to ensure that impact drives priority in funding decisions.

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