TOWARD A GREEN, CLEAN, AND RESILIENT WORLD FOR ALL
Having considered the opportunities and challenges presented by the state of the environment, examined ongoing efforts of partners, considered the lessons of the WBG’s experience, and listened to stakeholders, it is clear that this Strategy must bring all of the convening power, knowledge, finance, and partnership of the WBG to bear for game changing success for a green, clean, and resilient world. The vision laid out in this Strategy is ambitious, reflecting the scale of the challenges facing countries and the continuing barriers to action on global environmental issues. But the vision focuses on scaling up in areas where the WBG can fill a gap or add value to a global effort, recognizing that scarce budgetary resources must be used efficiently and selectively. The Strategy strives to answer the question, If transformation is needed in the next 10 years, how can the WBG’s capabilities best contribute to what our clients and partners need for success?

A first aspect of the Strategy will be ensuring that sectors across the WBG keep to their environmental commitments (as laid out in Annex 1). Building support for country and region-level investment in improving the environment will continue. Many of the actions in this Strategy cut across the green, clean, and resilient thematic areas. Environmental safeguards, for example, apply across the board, as do commitments to incorporating gender dimensions into WBG operations addressing the environment. Across all three agendas, the goal is to mobilize additional sources of financing while developing and spreading knowledge on innovation and best practice, providing support for policy reforms, and helping to strengthen institutions and capacity for environmental management.

Over the next 10 years, the Strategy will give priority to scaled-up action in seven key areas: (i) Wealth Accounting and Valuation of Ecosystem Services (WAVES), (ii) a new World Bank-led Global Partnership for Oceans, (iii) pollution management, (iv) low-emission development, (v) adaptation, (vi) disaster risk management, and (vii) improving the resilience of small island states. These priority areas cut across the green, clean, and resilient agendas of the Strategy.

Implementing this Strategy will require that the WBG ensures adequate resources, both human and budgetary, to deliver on the ambitious vision proposed. Helping clients to move toward green, clean, and resilient development will mean that the WBG will itself be working more actively to ensure that its portfolio of projects and activities become greener, cleaner and more resilient. WBG staff will need to possess adequate skill sets and capacity, which can be deployed for maximum impact. To this end, the WBG is presently conducting a talent review process that will help identify skill gaps and ensure adequate staffing to deliver on regional commitments.

Supporting the Environmental Pillar of Sustainable Development and the Green Agenda

The WBG’s “green” agenda places a priority on continued economic growth as a requirement for poverty reduction, but it calls for greener growth options to ensure sustainability. While waiting for the global dialogue on climate to move forward, the WBG’s role is to listen to its shareholders’ priorities...
and to respond with leadership, advocacy, partnership, analysis, knowledge-sharing, and financing.

A large part of the WBG’s green agenda will focus on how to nurture sustainable growth and poverty reduction while protecting biodiversity and ecosystems. In that regard, the Strategy considers both how growth can become more sustainable and how investing in the environment can stimulate growth. The WBG’s green agenda will focus on activities that can leverage change, including analytical and knowledge-sharing work: on natural capital accounting and valuing ecosystems; on the health of the world’s oceans; with the private sector on the development of key markets and initiatives; and on the expansion of support for biodiversity conservation.

**Valuing Ecosystems, Emphasizing Oceans, Protecting Biodiversity**

The World Bank will promote bringing natural capital into systems of national accounts to better assess the sustainability of growth. Why are we overexploiting natural resources to the point of system collapse? One reason is poor accounting and worse pricing. Historically, countries have not depreciated nonrenewable commodities in their national accounts as they are exploited. This understates the importance of transforming revenues from oil, minerals, and forests into productive and human capital. In a market-based world, as natural resources become scarce, their value should rise. And this is indeed evident in price trends for many single commodities. But when natural resources are more complex than a single commodity—such as an ecosystem that prevents erosion, acts as a storm barrier, filters water, or harbors fish—then they are seldom valued correctly in local markets or in national accounts. Although the concept of environmental or “green accounting” has been recognized and discussed for over 20 years, few, if any, countries actively include their natural assets in their systems of accounts. This systemic undervaluation of ecosystems and their services has been a key factor in poor policy formulation and global environmental decline.

With green growth for all as an objective, accurately valuing ecosystem services is vital for making better policy and investment decisions.3 Through the Global Partnership for Wealth Accounting and the Valuation of Ecosystem Services, the World Bank and its partners will promote sustainable development worldwide through the implementation of comprehensive wealth accounting that focuses on the value of natural capital and integration of “green accounting” in more conventional development planning analysis. In its first year, WAVES is supporting five developing countries (Botswana, Colombia, Costa Rica, Madagascar, and the Philippines) to “green” their national accounts, in partnership with developed countries that are leading the way in this area with expertise or financial support (Australia, Canada, Norway, and the United Kingdom). As WAVES builds its knowledge and experience base, and given growing demand arising from awareness of the importance of green and inclusive growth for sustainable development, the number of countries participating will significantly increase. A key goal of the World Bank’s work in this area is therefore to demonstrate how countries can use environmental accounts to improve decisions about managing natural capital and thereby support their sustainable development with genuine green and inclusive growth trajectories. For example, a country rich in forests could decide how to optimize these assets for a mix of ecosystem services such as water services, carbon storage, timber and nontimber forest products, subsistence livelihoods, coastal protection, tourism, and biodiversity (see Box 5.1).

**The Blue Agenda**

**The World Bank Group will leverage existing financing for fisheries, coastal and marine protected areas, and integrated coastal and marine ecosystem management to facilitate the creation of a new global partnership for oceans.**

The goal of this partnership is to sustainably enhance the economic, social, and ecological performance of the ocean’s ecosystems and living resources, with improved benefits captured by coastal and island developing countries and with global benefits accruing to the planet as a whole. Investing in healthier ocean ecosystems represents

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3 Note that valuation is a critical step to permit governments to monitor the overall sustainability of growth as well as to understand the value of the services provided by assets such as forests. But it does not affect individual behavior toward these assets, which is determined by price signals (or rules and regulations or even traditions).
BOX 5.1
Investing in mangroves

Accounting for natural capital can help people make better decisions about land use. The conversion of mangroves has a strong economic impact on local fishing communities and food production in several regions, as mangroves often serve as a nursery for fish and crustaceans. Moreover, maintenance or restoration of mangroves can reduce vulnerability of coastal areas to sea-level rise and extreme weather events while also contributing to food security. Often, cost-effective ecosystem-based approaches are implemented when correctly valued and incorporated into policy decisions. For example, when accounting for only marketed goods (timber and nontimber), mangroves have an estimated value of $864 per ha. Accounting also for coastal protection, the value per hectare is $16,861. This knowledge would better inform policy makers about the trade-off between preservation and conversion to shrimp farming, which has an estimated per hectare value of $9,632 (Barbier 2012).

Examples of how restoring and protecting mangroves can reduce vulnerability include:

- Mangrove forests have been estimated to have an economic value of $300,000 per km as coastal defenses in Malaysia, when compared with engineered alternatives (Ramsar Convention on Wetlands 2005).
- Since 1994, communities have been planting and protecting mangrove forests in Vietnam as a way of buffering against storms. An initial investment of $1.1 million saved an estimated $7.3 million a year in sea dike maintenance and appeared to significantly reduce losses of life and property from typhoon Wukong in 2000 in comparison with other areas (IFRC 2002; World Bank 2010b).
- Loss of mangrove area has been estimated to increase in expected storm damages on the coast of Thailand by $585,000 or $187,898 per square kilometer [in 1996 dollars], based on damage data from 1979–96 and 1996–2004 respectively (Stolton, Dudley, and Randall 2008).
- Recent studies in the Gulf of Mexico suggest that mangrove-related fish and crab species account for 32 percent of the small-scale fisheries landings in the region and that mangrove zones can be valued at $37,500 per hectare annually (Aburto-Oropeza et al. 2008).
- In Surat Thani, Thailand, the sum of all measured goods and services of intact mangroves exceeded that of shrimp farming from aquaculture by around 70 percent ($60,400) (Balmford et al. 2002).
a tremendous opportunity for the global economy—and most notably for coastal and island developing countries, where so much of the ocean’s wealth can be found. As the world prepares to feed more than 9 billion people, more and more experts worry about the overexploitation of fish stocks, given that fish provide 16 percent of the world’s animal protein intake. As pollution from industry, agriculture, and human waste mounts, as coastal zone ecosystems falter, and as biodiversity loss accelerates, better management of the two-thirds of the planet covered by oceans has become critical. Although $1.5 billion of WBG investments (including $100 million financed by GEF) already target “the blue economy,” an intensified effort is needed to register a global impact on the future of marine and coastal resources.

To accomplish this, the WBG will build partnerships and seek consensus, increase analytical work and knowledge sharing, reach out to the private sector, work across sectors, build capacity and institutions, and leverage innovative financing (see Box 5.2).

THE GLOBAL PARTNERSHIP FOR OCEANS WILL WORK TO SCALE UP SUSTAINABLE USE. At the 2011 Annual Meetings, the World Bank invited a wide range of partners to discuss the potential need and scope for a global partnership to support more sustainable use of the oceans and whether the Bank should play a role. The meeting sent a clear signal that the challenges and opportunities facing the oceans were beyond the scope of any one group or organization to address, and the Bank had a clear role to play based on its convening power around global public goods and its ability to leverage public investment across its portfolio. As a result, a WBG-wide Blue Team consisting of staff from Regions and anchor units as well as the IFC has been formed. After the Annual Meetings the Bank continued this dialogue with a number of groups and potential partners, and in February 2012 it announced the development of the Global Partnership for Oceans and invite interested partners to join. This partnership recognizes the vast array of actors working on oceans issues—foundations, NGOs, U.N. agencies, and MDBs. The partnership also includes the private sector—investors, fishing associations, aquaculture producers, seafood processors, and importers—which plays a critical role in ocean resource management, with many commercial actors.

BOX 5.2
Assisting Africa to rebuild overexploited marine fish stocks

Some of the world’s most fertile fishing grounds can be found off the coasts of Africa, with fisheries providing livelihoods for 10 million people as well as 20 percent of the animal protein intake in the region. But these fisheries and the habitats that support them are increasingly threatened due to weak governance that fails to control access to the fish resources. For this reason, the World Bank and partners are supporting investments to sustainably increase the net economic benefits generated by Africa’s marine fish resources and to keep more of the output within the region. This fisheries program includes direct support for a regional fisheries partnership mechanism to promote fisheries governance and policy reforms in Africa, together with the African Union, the New Partnership for Africa’s Development, the GEF, the FAO, and WWF. The program also includes regional fisheries investments in participating countries, starting with the West Africa Regional Fisheries Program in the coastal countries from Mauritania to Ghana. These investments ($128 million in six countries to date) aim to support the governance of marine fisheries, reduce illegal fishing, increase the local value added to fish products, and protect critical natural habitats and ecosystem processes that underpin the health of the fish stocks.
increasingly concerned about the sustainable supply of seafood. This reflects a broad consensus in many respects between conservation groups and the private sector on key priorities for healthier oceans. In our consultation, we heard clearly that the WBG can add value in supporting sustainable certification of seafood; strengthening the capacity of institutions governing fishing activities, with an emphasis on more secure and transparent rights; and using the WBG’s knowledge generation and convening power to advocate for effective policy in reducing the risk of negative externalities on the ocean environment. The WBG’s efforts will also build on existing partnerships that already address issues of concern to the oceans, such as PROFISH and WAVES, and strive to design a more comprehensive approach to supporting the blue economy.

**AS PART OF THE PARTNERSHIP, A NEW KNOWLEDGE PLATFORM ON OCEANS WILL BE EXPLORED.** The abundance of scientific and economic information on the oceans is critical for crafting solutions. With partners, particularly the FAO, the WBG will explore how data and knowledge platforms can be enhanced to serve real-time information needs and foster greater exchange of knowledge and South-South collaboration. As part of the Global Partnership for Oceans, an oceans knowledge platform will initially focus on sharing information on valuing improvements in the health of marine ecosystems and more broadly on analytical work assessing the health of oceans, including modeling global fish supply and demand through 2030. As with the World Bank’s work on climate knowledge, this platform will take advantage of growing initiatives on open data to provide for an exchange of data, models, and analysis. Knowledge will also be shared in various forums, including conventions under U.N. agreements, regional fisheries management organizations, and social media. Communications efforts would focus on the need for good governance of local resources and effective action on the global commons. As a precursor to these efforts, a short film on the oceans has been developed for the Partnership by the National Geographic Society, and an independent website has been established (see www.globalpartnershipforoceans.org).

With respect to increasing funding for oceans work, the Bank will focus on leveraging the evident alignment of the public and private sectors. A new Oceans Financing Facility will be established as part of the Partnership to catalyze greater external and IBRD/IDA financing of effective oceans governance in countries and regions, in order to help meet the triple bottom line of improving economic (rent capturing), social (poverty reduction through economic growth), and environmental protection outcomes.

**Biodiversity and Conservation**

In the past, World Bank clients have not always chosen to borrow for work on biodiversity and conservation. However, the World Bank has used its role as an implementing agency for the GEF to effectively leverage IDA and IBRD financing. It is now clear that biodiversity is one of the planetary systems most threatened by environmental degradation and climate change, and clients keen to stem the tide of extinction and loss of biological diversity are asking to work more with the World Bank on these efforts. The work on WAVES will help to establish the true value of biodiversity and the Global Partnership for Oceans will help the World Bank to scale up its conservation of marine protected areas. But the World Bank will also strive to do more on biodiversity linked to forests and agriculture as clients look more at landscape approaches.

**THE LENDING PROGRAM FOR BIODIVERSITY AND CONSERVATION WILL BE EXPANDED.** Clients are asking for more support on protected areas management, ecotourism, biosafety, wildlife protection, and conservation. The World Bank is learning to further leverage GEF financing on landscape management and make better use of GEF resources to develop programs for biodiversity protection. In addition, the World Bank will seek to build partnerships with a large array of organizations to scale up our work on biodiversity and conservation. Client countries are setting aside more areas for conservation and seeking sustainable financing for parks and park systems. Ecotourism, which has become the fastest-growing and most profitable segment of the tourism industry in the area, is providing alternative incomes.

**FUNDING PARTNERSHIPS, LEARNING, IMPROVED DATA, AND INNOVATIVE FINANCE FOR BIODIVERSITY WILL RECEIVE EVEN MORE ATTENTION.** Programs such as the Critical Ecosystem Partnership Fund, Save Our
Species, and the Global Tiger Initiative have provided interesting experience on different approaches to conservation. They have allowed the World Bank to gain knowledge on wildlife corridors, payment for ecosystem services, and wildlife monitoring. The WBG will try to find more innovative approaches to conservation finance, leveraging our work on forests, land, oceans, and private sector development.

**RESOURCING FOREST COUNTRIES TO PROTECT THEIR NATURAL ASSETS REMAINS A PRIORITY.** Client demand for assistance in managing forests is strong, and the WBG will continue to address this demand through lending and knowledge generation for sustainable forest management. The World Bank has gained valuable experience on concessions, community forestry, value-added wood industries, logging tracking, and other approaches to sustainably managing productive forests. Various climate financing instruments, including the Forest Investment Program under the CIFs and the Forest Carbon Partnership Facility (FCPF) are aiding the financing of afforestation and avoided deforestation. Of the 48 countries under the Forest Investment Program that expressed strong interest in becoming pilot countries, only eight were selected, due to limited resources. The WBG will strive to help all countries seeking assistance in managing forests.

Last year, six countries—Burkina Faso, Democratic Republic of Congo, Ghana, Indonesia, Lao PDR, and Peru—received grants of around $250,000 through CIFs for investment programs in sustainable forestry.

**TECHNICAL AND FINANCIAL ASSISTANCE TO COUNTRIES TO BECOME “READY FOR REDUCING EMISSIONS FROM DEFORESTATION AND FOREST DEGRADATION (REDD+)” WILL CONTINUE.** Responding to a mandate from the 2007 Group of Eight Summit, the World Bank established the FCPF to help countries address challenging issues of deforestation and forest degradation. Depending on their institutional capacity and financial resources, tropical and subtropical forest countries—or REDD+ countries—will vary in how long they will take to be “ready for REDD.” Through the FCPF Readiness Fund, selected countries are developing the necessary systems, such as for monitoring, and putting in place policies that help them get access to the Carbon Fund and prepare for other REDD+ programs. Truly sustainable capture of carbon, just like sustainable forest management, will require addressing the challenging governance, land management, and benefit-sharing mechanisms. The World Bank will continue to work with its partners to develop forestry in the carbon markets and ensure that it is a rigorous capture of carbon and also of co-benefits. The World Bank will also contribute through policy dialogue, DPLs, and sector investment loans. In the private sector, support will be aimed at reducing forest conversion and improving access to certification, global standards, and carbon markets. Efforts to accelerate payment for environmental services programs will be expanded. Similarly, the WBG will look at the potential for trust funds, bonds, infrastructure offsets, carbon premiums, private-public partnerships, and other tools that can scale up financing for conservation.

**THE WORLD BANK WILL FURTHER DEVELOP THE “WILDLIFE PREMIUM” AS PART OF ITS CLIMATE FINANCE WORK.** Building on the concept that World Bank Group President Robert Zoellick launched at the Convention on Biodiversity COP in Nagoya in 2010, the wildlife premium idea recognizes that lowering carbon emissions is only one part of measuring the benefits of sequestering carbon by protecting forests and other natural habitats. “Co-benefits” linked to simultaneously protecting wildlife and biodiversity are more difficult to value and are not yet traded on an international market. The “wildlife premium” on carbon trades that protect habitats will test the market’s willingness to pay for these co-benefits.

**SUPPORT TO GOVERNANCE AND INSTITUTIONAL REFORMS FOR IMPROVED NATURAL RESOURCE MANAGEMENT AND BIODIVERSITY PROTECTION WILL CONTINUE.** Recognizing the importance of natural resources for livelihoods and for fiscal revenues (from oil, gas, minerals, timber, fisheries, freshwater, and coastal resources), the WBG will continue to work with clients to explore better ways to manage this wealth to sustain growth. This includes improving accountability and transparency in revenue management through the Extractive Industries Transparency Initiative (EITI). Tools like Strategic Environmental and Social Assessments and Country Environmental Analyses will help inform client decision making by
identifying environmental priorities and the institutional and governance gaps that need to be closed so that enforcement of policies linked to conservation or the sustainable management of natural resources can be more rigorous.

**WILDLIFE CRIME HAS BECOME BETTER ORGANIZED AND MORE VIOLENT, BUT PROTECTION MEASURES ARE ALSO ADVANCING.** Further work is needed on law enforcement for forests, wildlife and fisheries management, and revenue or benefit sharing at the local level in sectors such as forestry, hydropower, and mining. In South Asia and in the Mekong Basin, the World Bank is supporting regional cooperation for protection of wildlife in Bangladesh and Nepal by helping governments to strengthen joint capacity, institutions, knowledge, and incentives to collaborate in tackling illegal wildlife trade and other threats to habitats in border areas.

**THE WORLD BANK IS JOINING FORCES WITH OTHER PARTNERS TO FIGHT ENVIRONMENTAL CRIME.** Under the International Consortium on Combating Wildlife Crime, the World Bank will work with INTERPOL, the U.N. Office of Drugs and Crime, the World Customs Organization, and CITES to reduce wildlife crime. Within the World Bank, a Community of Practice on Environmental Crimes has been established and is implementing an action plan that will diagnose environmental crime and provide a business case for addressing it as a critical development issue; give priority to select operational activities, such as in the areas of customs reform and forest governance; and identify discrete opportunities for advancing the agenda through specific environmental law enforcement initiatives, for example through cross-border interdictions. The work will build on the World Bank’s operational core competences and focus on countries and issues where the development impacts are the greatest.

**PLANNING, MONITORING, AND EVALUATING ENVIRONMENTAL PROGRESS IN CLIENT COUNTRIES WILL BE STRENGTHENED.** Through its work in carbon finance, the World Bank will also continue to improve monitoring of carbon emissions, soil degradation, forest density, and water resources. As we propose to do with climate, wealth accounting, and oceans, the World Bank will also leverage knowledge on biodiversity through support for the collection of better data, open access to the data, and the construction of a knowledge platform that allows clients and stakeholders to compare approaches and results. Embedding these tools into World Bank environment programs and strengthening their adoption will be an important focus.

**POLICIES TO REMOVE BARRIERS TO GREEN, CLEAN, AND RESILIENT GROWTH**

**MARKET AND POLICY DISTORTIONS THAT LEAD TO BIASES AGAINST GREENING DEVELOPMENT NEED REFORM.** The WBG will explore opportunities for policy reform that would improve the efficiency and cost-effectiveness of environmental management, including reduction of subsidies and trade barriers to environmental goods and services. Through the Green Growth Knowledge Platform, research will focus on how to build greater support across national constituencies (for example, how to mitigate the effects of energy price increases on the poor and options to channel efficiency gains from reforms into broader opportunities). The trade-offs in making greener investment choices at the sector level will also be analyzed. Analytical work will assess how environmental co-benefits of actions to mitigate or adapt to climate change can be identified and maximized in projects. Understanding barriers to the transfer and use of win-win technologies and practices (such as environment and health; energy efficiency, energy cost, and GHG emissions; ecosystem protection and improved livelihoods for the rural poor) will be key to this effort.

**MARKET-BASED MECHANISMS AND SUSTAINABLE SUPPLY**

**THE CREATION OF INCLUSIVE, ENVIRONMENTALLY SUSTAINABLE, AND EFFICIENT MARKETS WILL BE A KEY FOCUS.** The WBG will work with private sector firms to address market barriers to business practices and decisions that lead to profitable commercial outcomes while creating environmental or social value. IFC’s Advisory programs will focus on climate-related investments and sustainable supply chains and look toward environmental and social value creation. Conservation NGOs are increasingly realizing that they cannot succeed in protecting species without a focus on the drivers of deforestation, landscape...
degradation, and overfishing. They are reaching out to form partnerships with the private sector on greening supply chains, and the WBG will partner with them in these efforts.

CLEANER PRODUCTION AND SUSTAINABLE SUPPLY CHAIN EFFORTS WILL BE EXTENDED. The WBG plans to extend its work on sustainable supply chains to new industries. As an example, work is progressing on the development of new standards for forest harvesting and marketing activities, including tracking wood products from the standing tree to the timber product at the point of export. Monitoring the origin and destination of legally harvested wood products serves to promote better forest management. Similarly, the IFC seeks to green supply chains in various industries through investment and advisory work at project and sector levels. The WBG will also promote sustainable land use and alternative livelihoods in the rain forest through dissemination of soy and beef standards, reforestation of degraded lands, forestry licenses and concessions, and inclusive supply chains for small cash crops.

Many countries lack alignment between environmental management and industrial competitiveness policies. Linking development goals (like maximizing public welfare and enhancing competitiveness) means linking pollution management approaches to management of environmental risks. In the Europe and Central Asia Region, for example, effective approaches to cleaner production programs are aligned with EU environmental policies, making a critical contribution to sustainability.

PRIVATE SECTOR CLIENTS WILL BE ASKED TO DEVELOP STEPS TO SCREEN AND MONITOR FOR SUPPLY CHAIN RISKS. For example, IFC’s Performance Standard 6—Biodiversity Management and Sustainable Management of Living Natural Resources—has been expanded to include requirements for clients to assess whether their primary suppliers are contributing to degradation or conversion of natural and critical habitats. If so, clients would either shift their purchasing to suppliers who are not doing this or would work with their suppliers to stop conversion of sensitive habitats. Where this is not possible, the IFC will expect the client to shift suppliers over time.

UPDATING AND CONSOLIDATING THE SAFEGUARDS

THROUGH ITS SAFEGUARDS UPDATE AND CONSOLIDATION PROCESS, THE WORLD BANK WILL CONTINUE TO MOVE BEYOND A “DO NO HARM” APPROACH. A process is under way to update the World Bank’s safeguard policies to address emerging issues, incorporate lessons learned, and meet the changing needs of clients. This will allow World Bank policies to better support environmentally and socially sustainable
development and provide for their more effective, efficient, and timely application. The goal is to make the policies more performance-oriented and implementable by clients at the national and subnational level. The updating and consolidation process will seek opportunities for use of a greater range of instruments to assess potential environmental and social impacts and risks. As the process moves forward, it will involve a program of stakeholder consultations on a global level that will include a diversity of parties.

The World Bank is also applying its safeguards to new climate finance instruments like the FCPF, which builds on REDD+ readiness programs in selected countries. REDD+ activities will be subject to Strategic Environmental and Social Assessments. The World Bank will work with the other MDBs and relevant U.N. agencies in REDD+ activities to ensure a coherent approach to applying safeguards to these activities. The World Bank will also continue working with clients to strengthen their own systems of environmental safeguards.

Supporting the Clean Agenda

As the world strives to green growth, a central part of the challenges and the solution will be cleaning up the impact on air, land, and water of earlier growth patterns. The WBG will focus its clean agenda on pollution management, carbon mitigation and low-emission development, and carbon and climate knowledge and finance.

FINDING ANSWERS, PROVIDING RESOURCES IN THE FIGHT AGAINST POLLUTION

The World Bank Group will build on lessons from successful pollution management policies and projects to provide innovative solutions. Particularly during the last decade, many developing countries have established environmental institutions, developed environmental policies and regulations, and increased their general awareness about environmental issues. Through such efforts, pollution levels in some of those countries have begun to level off. The WBG will assist in further accelerating and expanding such positive developments and will share constructive results and experiences across developing countries, for example through South-South collaboration and environmental awareness events.

Significant lessons have been gathered from specific pollution abatement projects in all Regions, such as from the $1.5 billion project to clean up India’s vast Ganges River. Similarly, the Gulf Environmental Partnership and Action Program in the Middle East and North Africa Region builds on lessons from earlier regional programs, such as the Mediterranean Environmental Technical Assistance Program, which strengthened the environmental management capacity and policies of riparian countries of the Region. New operations will build on these types of lessons, with an eye to innovation and leveraging. In the Philippines, a large programmatic approach consisting of a cluster of advisory services and lending operations is being undertaken to address pollution management in the Manila Bay area.

Through Green Growth, Firm Competitiveness and Pollution Management: A Sourcebook of Policy Tools for Governments, Private Sector, Financial Institutions, Civil Society and the Judiciary, the WBG will disseminate lessons learned from more than 10 years of experience. Analytical work to support countries’ decision-making processes in integrating environmental management, social inclusion, and growth objectives will continue (see Box 5.3).

Priority efforts will focus on air pollution. With many fast-growing economies now facing increased environmental health costs associated with air pollution, demand for cleaner production and improved air quality is growing. The World Bank will focus on helping clients manage air pollution by strengthening environmental health valuation analysis to help identify priority actions for reducing pollution through a better understanding of where pollution comes from and how to cost-effectively reduce the most critical sources. Also, it will provide analytical and advisory support to enhance the environmental governance frameworks and policy tools for improved air quality in client countries, particularly in Asia and the Middle East and North Africa. Air pollution is usually generated from a
variety of sources, including energy, transportation, various industries, natural dust, and so on, which implies that often a multisectoral approach has to be developed in order to substantively reduce overall pollution levels. The World Bank, through its transportation sector, will address fuel quality and the phasing out of highly polluting vehicles. Through its energy sector, the WBG will address cleaner energy options, and through the application of the new sourcebook on pollution management, it will address pollution from a number of industrial sectors.

**THE WORLD BANK WILL FOCUS ON LEGACY POLLUTION AND WATER BASIN CLEANUP.** Building on lessons from the last 10 years, the World Bank will continue to support countries in Europe and Central Asia in their efforts to address pollution legacies. It will also support countries in East Asia and the Pacific, Africa, and Latin America. These regions are expanding industrial development and need to manage the resulting pollutants. Work will focus on mitigating public health risks from legacy pollution and past industrial activities and on river cleanup projects in Europe and Central Asia, Latin America, and South Asia (see Box 5.4). In Africa, the World Bank will support new analytical work on hazardous waste, pesticides, and persistent organic pollutants.

Agriculture is a major source of river pollution in many countries, including those with smallholder-intensive agriculture. The World Bank is assisting countries with improved nutrient management and control of agricultural runoff. In China, where promotion of environmentally sustainable agriculture is a strategic priority, operations are under way to address these issues. These include the Jilin Food Safety and Agricultural Technology Project and the Eco-farming and Henan Yellow River Ecological projects.

The World Bank will also focus on the increased challenge of marine pollution by working on ways to address critical pollution sources, such as land-based discharges, atmospheric inputs, marine transportation, dumping, and oil spills. In particular, this work will focus on controlling the main sources of nutrient, petroleum, and solid waste pollution.

**EXPANSION OF THE USE OF CLEAN COOKSTOVES WILL BE SUPPORTED.** The World Bank will work with its partners and carbon finance funds to scale up use of a new generation of stoves to help reduce indoor pollution, benefit women and girls, and reduce pressure on the environment. The WBG’s draft energy strategy also highlights the role of sustainable biomass energy in meeting cooking and heating needs, especially in Africa and South Asia. It emphasizes the importance of sustainable wood-fuel production and processing along the value chain.

**GLOBAL TRANSBOUNDARY IMPACTS OF HAZARDOUS CHEMICALS WILL CONTINUE TO BE A PRIORITY.** With Multilateral Fund, GEF, and other support, the WBG will continue to help countries fulfill their obligations to address global pollution risks. With the

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**BOX 5.3**

**Strengthening the knowledge base on structural change and green inclusive growth in Pakistan**

The government of Pakistan recognizes that transportation and trade logistics efficiencies are prerequisites for economic stabilization, sustained growth, and competitiveness. The transportation sector plays an important role in linking other sectors in the economy, contributes to both domestic and international trade, and helps facilitate the spatial transformation occurring in Pakistan. However, reforms and investments in the trade and transportation sectors could stymie poverty reduction efforts in some regions, aggravate environmental problems like urban air pollution and greenhouse gas emissions, and affect women or contribute to social conflict. The Bank’s Strategic Environmental, Poverty, and Social Assessment identifies cost-effective ways to improve the efficiency of the freight transport system to meet goals of enhancing export competitiveness, decreasing spatial inequality, reducing environmental degradation, and developing interventions to support those who might be affected by reforms, particularly the poor, women, and other vulnerable groups.
ARGENTINA—Matanza-Riachuelo Basin Sustainable Development Project. The Matanza-Riachuelo, a tributary of the Rio de la Plata, is the most contaminated river basin in Argentina and the country’s most visible environmental issue. Over the past 100 years, the river basin—home to 3.5 million people, including Argentina’s largest concentration of urban poor—has been used as a sewage sink for Buenos Aires. More than 4,000 industrial facilities are located within the basin, and many of these discharge untreated effluents directly or indirectly into the river. The poorest populations living alongside the river are in constant contact with contaminants, including untreated organic waste and toxic industrial chemicals. This comprehensive $840-million Bank-financed cleanup project supports the government’s Integrated Basin Cleanup while improving sanitary conditions along the banks of the La Plata River and providing a long-term and cost-effective solution for safe disposal of wastewater from the Buenos Aires Metropolitan Area. The project includes investments in modern sanitation infrastructure to reduce flows of sewage effluent, improved environmental monitoring and enforcement of environmental targets for industry, and financing of cleaner production investments so that small and medium-size enterprises comply with environmental standards.

INDIA—The National Ganga River Basin. This transformative project is helping the government of India clean up its iconic Ganga River. At $1.5 billion, it is the largest investment made by the World Bank in the environment sector. It will help build the capacity of the recently formed National Ganga River Basin Authority, with the medium-term goal that no untreated municipal or industrial wastewater will be allowed to flow into the main stem of the river after 2020. The project will help fund priority investments in four key sectors critical for reducing pollution in the river: wastewater collection and treatment, industrial pollution control, solid waste management, and riverfront management. It promotes clean development and drives innovation by piloting the use of new wastewater treatment plant technologies, establishing the Ganga Knowledge Center, and building the capacity of central- and state-level institutions.

KAZAKHSTAN—Nura River Cleanup. From the 1950s until 1997, a former Karbide factory used mercury in the production of synthetic rubber. The factory’s original wastewater treatment plant was not designed to remove mercury from process water, so mercury flowed to the factory’s discharge channel and then to the Nura River. The $91.6-million Bank-financed Nura River Cleanup Project supports the government to provide access to safe and reliable water by cleaning up the mercury pollution at the former factory site and in the Nura River basin and by rehabilitating a nearby dam. Cleanup measures that bring river water quality into line with international standards for mercury concentration are essential for improving water quality and safety.
Montreal Protocol engaged in the phaseout of hydrochlorofluorocarbons through 2030, it is viewed as a key partner in addressing climate change. The WBG will promote alternatives to the use of ozone-depleting substances that also maximize climate benefits through adoption of climate-benign substances where feasible and improvement of energy efficiency in related equipment. The World Bank will help developing country partners worldwide reduce and phase out both the production and use of ozone-depleting substances. Legacy issues associated with persistent organic pollutants, including in relation to brownfield redevelopment, will be addressed, and the reduction of future releases will be given priority through interventions across sectors. Recognizing the environmental and human health impacts of global mercury contamination, and the worldwide consensus to phase out its use and reduce its environmental releases, the WBG will seek to integrate mercury reduction into its investment programs.

**WORK WILL CONTINUE TO HELP DEVELOPING COUNTRIES ADDRESS THEIR ENVIRONMENTAL HEALTH CHALLENGES.** Through the last decade, it has become clear that analysis of the physical and economic costs of pollution, particularly health costs, has become a very important tool for raising awareness and convincing governments and the public of the need for effective pollution management. The World Bank will continue to develop understanding of the health effects of pollution and help countries to identify and implement the most cost-effective interventions for improving environmental health outcomes, by taking a cross-sectoral approach and focusing on the most polluting sources.

**WORK WILL CONTINUE TO REDUCE THE WORLD BANK GROUP’S INTERNAL ENVIRONMENTAL FOOTPRINT.** The WBG has committed to reducing the environmental impacts of its day-to-day operations through the WB Corporate Responsibility Program and the IFC Footprint Program. The WBG continues to strengthen its corporate GHG management program by ensuring alignment with international standards and best practice. The WBG will also support its sustainability efforts by formalizing a corporate sustainability vision statement, establishing a management framework with specific performance indicators (in line with those of the United Nations Environmental Management Group and international standards such as ISO 14001), increasing efforts to promote staff engagement, and expanding communications to external audiences on WBG efforts to reduce its corporate environmental impact. The WBG is also actively working with country offices and clients to demonstrate corporate sustainability initiatives globally.

**RAMPING UP SUPPORT FOR LOW-EMISSION DEVELOPMENT**

**WORK ON CLIMATE MITIGATION WILL BE EXPANDED.** Given the prospect of continuing rapid urbanization in developing countries, and the resulting growth in energy and transport services, the WBG will continue to support planning efforts and policy and institutional reforms that promote low-carbon growth and improved pollution management. More than 90 countries have registered their 2020 plans to address GHG emissions with the UNFCCC, including 51 developing countries.

Support and capacity are needed to design, plan, and implement low-emissions policies, to enhance coordination across ministries and engage on Nationally Appropriate Mitigation Actions at national and subnational levels, to improve data streams and access to information, to develop the monitoring, reporting, and verification (MRV) frameworks necessary to secure international support, and to obtain finance for implementation of low-emission plans. The WBG is well placed to support this process. Low-carbon growth studies have been completed for Brazil, China, India, Mexico, South Africa, Indonesia, and Poland; additional studies are under way in Nigeria, Morocco, Tunisia, Macedonia, Colombia, Uruguay, Vietnam, and Costa Rica. In Mexico, for example, the study contributed to obtaining $500 million from the Clean Technology Fund and $401 million for a World Bank financed DPL on low-carbon development. Knowledge and lessons learned are being exchanged across these activities.

**SUPPORT TO LOW-EMISSION DEVELOPMENT INVESTMENT PROGRAMS WILL INCREASE.** Clean energy development and access to electricity services are key strategic...
The strategic value of hydropower

Situated at the nexus of water and energy, hydropower currently supplies 84 percent of the world’s electricity derived from renewable sources and is increasingly important to a low-carbon energy future. It is also vulnerable to projected climate change. As a climate change mitigation measure, hydropower strengthens a region’s ability to regulate and store water, thereby increasing resilience to flood and drought shocks. The WBG can help maximize the strategic value of hydropower in four key ways:

- **Scale up financing:** This would include measures to improve the environment for private sector participation and getting access to carbon credits. The use of WBG instruments to address loan tenures, local currency financing, and similar financial challenges would also be supported.

- **Promote good practice:** Important actions here include promoting transparent contractual arrangements, carrying out baseline studies early on, adapting to risks during implementation, and getting the institutional arrangements and policy incentives right.

- **Strengthen planning:** These measures include supporting governments in basin-wide and cross-sectoral planning, improving data collection and analysis, mainstreaming hydropower into climate change programs, and addressing climate impact management in hydropower design.

- **Leverage regional development:** Key mechanisms include promoting multipurpose projects, enhancing multicity power pools, exploring synergies among complementary projects, and sharing revenue.
ENGAGEMENT IN URBAN TRANSPORT WITH A NEW GENERATION OF PROJECTS IS DEMONSTRATING THE BUS RAPID TRANSIT AS A LOW-COST GREEN ALTERNATIVE. The introduction of these bus systems as part of a more integrated public transportation system has been piloted in a number of countries (including Mexico, Colombia, and China), helping to make public transportation more efficient, affordable, and reliable. Countries like India are realizing that there are many growing cities with no formal bus system as yet. The WBG plans to support expanding these pilots to include components that enhance the “clean” elements of a comprehensive urban transportation program, such as an air quality monitoring and management plan, and its complementary measures (for example, vehicle emission inspection and maintenance programs).

WORK TO STRENGTHEN CAPTURE OF CO-BENEFITS BETWEEN GREENHOUSE GAS AND LOCAL POLLUTION EMISSION REDUCTION INITIATIVES WILL CONTINUE. Many developing countries are aiming to reduce both GHG and local pollution emissions. Studies for China indicate that measures that lower air pollution and greenhouse gas emissions simultaneously are much more cost-effective than those that focus only on air pollution control measures to mitigate negative health impacts. A smart mix of measures (such as energy efficiency improvements, cogeneration of heat and power, fuel substitution, and so on) that include actions that reduce energy consumption can cut air pollution control costs and achieve lower GHG emissions (Amann et al. 2008).

The WBG will continue efforts to identify and capture such co-benefits.

THE CO-BENEFITS AGENDA WILL BE EXTENDED TO ALSO ADDRESS SHORT-LIVED CLIMATE FORCERS. The emerging scientific evidence on the climate impacts of short-lived climate forcers (SLCFs) such as black carbon and ozone, which were until recently considered just local air pollutants, also provides a good opportunity to address climate change through WBG operations. It is increasingly evident that addressing SLCF emissions from transport, energy, and agriculture can help “buy time” for climate actions, given the short atmospheric life span but very high warming potential of such emissions.

CARBON FINANCE

Carbon finance remains a key tool in the effort to mitigate carbon emissions. Overall, carbon markets are fragile due to the uncertainty of the future of the Kyoto Protocol. However, as the world waits for resolution on revision of the protocol and on a global climate deal, there is a strong need to continue developing the breadth and depth of the markets as much as possible.

The Need for Carbon Markets

The U.N. Secretary General’s High Level Advisory Group on Climate Finance states that carbon markets are key in climate policy and that they must play an increasing role in the future. Carbon markets can provide a price signal for GHG emissions, directing long-term investments toward clean technologies and creating incentives for least-cost abatement activities. A large part of climate finance for developing countries can be mobilized through carbon markets and channeled toward developing countries through instruments leveraging further flows of private capital. In this context, the Clean Development Mechanism (CDM) is expected to achieve 1.2 billion tons of CO₂ emissions reductions by 2012. This represents 40 percent of the emission reductions expected to finally result from the Kyoto Protocol (excluding the United States). It is estimated that financial flows to developing countries of $27 billion have been committed to date through emissions reductions purchasing agreements (including post-2012 credits). This figure does not include any underlying investment finance flows.

Role of the World Bank Group

Different from other markets, carbon markets are in themselves a policy instrument, depending entirely on policy making and regulation. They can only be implemented if bridges can be built between the climate policy process and the operational requirements of concrete mitigation activities. This bridging function is the role of the WBG in carbon markets, but, equally important, the World Bank is working to ensure that its low-income clients have access to carbon finance.

The World Bank has pioneered carbon markets and facilitated market access for developing countries.
since 1999, when it started activities to launch the Prototype Carbon Fund. The Carbon Finance Unit of the World Bank currently has under its management 12 carbon funds and two technical assistance trust funds, with a combined capital that surpasses $2.7 billion. The existing carbon offset project portfolio of the Carbon Finance Unit includes 160 projects that will purchase more than 200 million tons CO₂-equivalent emissions reductions.

The WBG has catalyzed the market and helped to pull in the private sector, including by developing new methodologies (such as carbon accounting standards) and releasing them as public goods for project developers to use (to date contributing to 52 such methodologies in 12 different sectors). Working with partners, the World Bank has also been a key innovator in developing new concepts for carbon crediting, such as programmatic CDM, and in broadening carbon crediting into new areas, such as land use, land use change, and forestry (LULUCF) and REDD+.

The WBG’s Carbon Market Strategy
Developing access to carbon finance for low-income countries will be the centerpiece of the WBG’s strategy. The main challenge for the current carbon market is how to rapidly move forward to a scaled-up market. The WBG’s strategic response is threefold: First, it is important for the World Bank to encourage and advance the policy and regulatory process to simplify rules and accelerate speed to market. Second, the World Bank will support a continuation of carbon market activity to assure that developing countries retain their existing capacity, technical knowledge, and carbon market infrastructure. Third, the Bank will support building up the potential supply for a scaled-up future carbon market in order to facilitate decision making on extended commitments and avoid possible future market dysfunctions resulting from supply shortages.

Achieving the WBG’s objectives will require inputs to CDM reform, conceptualization of new market mechanisms, and potential bilateral piloting. Meanwhile, the WBG must further participate in the pioneering work to create innovative ways to use public finance to bridge the current period of uncertainty and to overcome market imperfections. This includes using public finance not only for the development of scaled-up carbon crediting schemes but also for initiating pilot purchases as an effective way of performance-based public spending, with the option of recycling public funds by selling generated assets in a future compliance market. Implementation will be met through a range of concrete new operational initiatives, including:

- **Carbon Partnership Facility (CPF):** A fund to scale up investment in clean technology through programmatic and sector-based approaches, CPF
uses programmatic approaches to scale up emission reduction programs, which are included in integrated financing packages linked to World Bank lending operations.

- **Forest Carbon Partnership Facility (FCPF):** The FCPF is a partnership and transparent platform for meaningful exchanges on REDD+ issues, as well as for the generation of a new type of asset based on avoided deforestation. It builds capacity and knowledge, preparing forest countries to participate in REDD+ by defining “readiness” and piloting financial incentives.

- **Partnership for Market Readiness (PMR):** The PMR is a facility created to provide grant financing for building components of market readiness and to prepare for piloting new market instruments. It provides a forum for knowledge sharing, technical discussions, and collective innovation on new market instruments, including development of domestic carbon markets. Increasingly, the PMR is also a platform for examining the possibilities for carbon trading between domestic markets on a bilateral or multilateral basis.

- **BioCarbon Fund Tranche 3 (BioCF T3) (next generation):** The BioCF T3 will continue its engagement in the forestry and agriculture carbon markets as well as expand on-the-ground implementation experience and the lessons learned from its predecessors in forest and agriculture carbon finance activities. The BioCF will continue developing new methodologies by pioneering activities in areas that have not yet been tested for land use but that have significant GHG mitigation potential.

- **Carbon Initiative for Development (CI-Dev):** The CI-Dev is currently taking stock of lessons learned with the carbon market experience in micro-projects and least developed countries from its predecessor, the Community Development CF, in order to continue promoting the development of carbon markets with an emphasis on Africa. The initiative will identify and develop the emission reductions assets and ensure the programs included will have a solid financial architecture by providing resources for capacity building, technical assistance, and financing to the seller entities behind the programs.

- By supporting readiness for new areas and new market mechanisms, the World Bank can help clients ensure that carbon finance is consistent with development planning. The new initiatives are designed to address all categories of developing countries (middle-income, low-income, forest-rich countries) and to support all relevant carbon market developments (new mechanisms, including potential bilateral pilot phases and reformed CDM, LULUCF, and REDD+).

### CLIMATE FINANCE

Although carbon markets are one part of the solution to financing climate mitigation, they are not sufficient for mitigation and do not address adaptation. At the UNFCCC COP 16 meeting in Cancun, the world agreed to move toward greater financing of climate action with Fast Start Finance and a pledge to increase funding to $100 billion per year by 2020. Those attending the meeting also endorsed the establishment of the Green Climate Fund (GCF) to channel this funding to developing countries. In Durban, at COP 17, the platform adopted gave the GCF legal status and stipulated that the Board would be selected by March 2012 with an interim secretariat in Bonn managed by UNFCCC and GEF. In addition, the Durban platform agrees that the GCF should include a private sector facility and that bids for the permanent secretariat should be prepared by April 2012. In the advent of the GCF, the World Bank will continue to work with other MDBs to pilot programs for climate action through the CIFs. In addition, the WBG will continue to help policy makers and global leaders think about how to raise the funding necessary for climate mitigation and adaptation. Together with the United Nations Development Programme (UNDP), the World Bank has developed a Climate Finance Options Platform with the objective of helping developing countries understand financing opportunities for climate action. The Bank also prepared a paper for the Group of 20 on climate finance, examining the possibilities for raising funds through fiscal policy, tax policy, and transfers.

The WBG has also committed itself to track its own contributions to climate finance more accurately. The system for coding contributions to mitigation and adaptation was developed by an MDB task force in 2011. It is essential that all MDBs are using the same parameters for tracking investments in...
mitigation and adaptation, so that investments are comparable. The World Bank is providing training to staff in all regions to assist with future coding of projects linked to climate finance. Projects were retroactively coded for FY11 and, starting in FY12, all projects will be coded for contributions to mitigation and adaptation through the Bank’s business management system.

**THE IFC IS INTEGRATING CLIMATE CONSIDERATIONS INTO ITS ACTIVITIES ACROSS ALL INDUSTRIES AND REGIONS AND SETTING AMBITIOUS TARGETS FOR ITS CLIMATE-FRIENDLY INVESTMENTS.** The IFC goal is 20 percent of investments by FY13, with an aspiration of up to 25 percent. The climate change share of overall climate-focused advisory project expenditure is expected to increase to 22 percent by FY13 and 26 percent by FY14, from 9 percent in FY10. While the IFC’s investment and advisory work in energy efficiency, renewable energy, and resource efficiency will remain the mainstay of its climate change activities, it also aims to grow its Cleantech venture investment portfolio.

The IFC is working on several initiatives to mobilize commercial and concessional funding to support private sector climate investments in the form of equity, debt, and technical assistance. These complement continuing work with the CIFs and the GEF. The IFC will continue to build on its innovative carbon finance mechanisms, including through the recently launched €150 million IFC Post-2012 Carbon Facility that will mobilize funds from European utilities and energy companies to help extend carbon markets beyond 2012.

**UNDERSTANDING AND MANAGING THE WORLD BANK GROUP’S ENVIRONMENTAL IMPACT**

The WBG has taken great strides to ensure that its own environmental impact is minimized and offset. These efforts will be rolled out to encompass all country offices—that is, each office will strive to make its use of water and electricity more efficient and to measure its carbon emissions. As with the headquarters, the carbon emissions of country offices will also be offset, along with emissions from staff travel.

**WORK TO MEASURE GHG EMISSIONS FROM THE WORLD BANK GROUP’S PORTFOLIO WILL CONTINUE.** The WBG is advancing work on GHG analysis of investment projects. A corporate commitment to better understand the GHG “footprint” of the WBG portfolio is articulated in the Strategic Framework on Development and Climate Change (SFDCC). The SFDCC makes provision for the IFC to start portfolio-level assessments and for the World Bank to initiate pilot work on GHG analysis in energy, transport, and forestry sectors.

The IFC has been expanding GHG accounting and analysis of its portfolio and projects. As of February 2009, the IFC requires GHG emissions for all new, real-sector projects (but not for FIs and advisory services). Gross, or actual, project GHG emissions are calculated. This approach has enabled the IFC to collect core data for all types of projects and to focus on integrating this work into the project cycle, automating data collection, and conducting monitoring and evaluation. In addition, as of FY12, the IFC will assess the GHG reductions of its climate-related projects. The IFC’s approach is based on definitions, methodologies, and tools developed within IFC in consultation with other multilateral financial institutions. The purpose is to evaluate the climate impacts of IFC mitigation projects in real sector projects, FIs, and advisory services.

In parallel, GHG analysis is being piloted in select energy, transport, and forestry sector projects at the World Bank, identifying methodologies that could potentially be applied to a majority of the Bank’s lending portfolio across the three sectors. A number of technical issues remain to be resolved, including the need to agree on assessment of net or gross emissions and definitions of project baselines and boundaries. Additional work will be undertaken to test methodologies and tools in parallel with technical consultations. The World Bank will begin conducting GHG emissions analysis in mid-FY13 for all energy, transport, and forestry projects that have agreed methodologies and tools, while continuing to test and develop approaches for additional sectors. It is envisaged that GHG assessments for investment lending operations will be phased in as a World Bank business requirement over two years starting in mid-FY13.
Supporting the Resilience Agenda

THE WORLD BANK GROUP WILL INTEGRATE RESILIENCE INTO DEVELOPMENT. In a world undergoing accelerated climate change and other sources of environmental and social stress, sustainable development requires a stronger focus on resilience. The WBG will emphasize the importance of considering resilience and adaptation in all policy dialogue, sector investments, and knowledge work. This will require additional analysis on disaster risk management, resilient infrastructure, and adaptable agriculture and a particular focus on small island states. Fully consistent with this approach, the World Bank’s FY2012–2015 Country Partnership Strategy for Belize is entirely focused on supporting the government’s efforts to achieve inclusive and sustainable natural resource–based growth and enhanced climate resilience that benefits all Belizeans. The strategies for Tonga and the Maldives also have strong elements of climate change.

STRENGTHENING THE FOCUS ON DISASTER RISK MANAGEMENT

Climate change is increasing the frequency and intensity of severe weather and changing the patterns of rainfall. This has led to more-frequent extreme events such as heatwaves, droughts, and floods (IPCC 2011), which can in turn exacerbate poverty and environmental challenges. Climate change adaptation and disaster risk reduction are complementary and mutually reinforcing actions that promote better risk management. The Global Facility for Disaster Reduction and Recovery is already adopting climate adaptation as integral to its business plans, and it supports 14 countries to formulate action plans integrating disaster risk reduction and climate adaptation. A 2010 joint World Bank Group–United Nations report showed that investing in preventive measures can lower vulnerability to natural hazards. That investment typically costs countries significantly less than relief and rebuilding after disasters hit. Prevention is all the more needed given that the number of people exposed to natural hazards in large cities could double to 1.5 billion by 2050 (World Bank and UN 2010).

In its approach to disaster risk management, the WBG will work with clients to assess how to minimize the damage of natural disasters in terms of loss of life and structural damage. For example, it might involve adapting infrastructure to floods with drainage systems that are more robust or to droughts by checking that dams or irrigation systems can withstand lower water levels. The Bank will also expand the use of instruments such as Deferred Drawdown Options to provide help recovering from natural disasters. In addition, the WBG is pioneering work related to climate risk insurance (such as Mongolia livestock insurance).
Finally, revamping social protection systems, investing in women, and building social capital in communities are also essential for building resilient communities that can endure a natural disaster and recover quickly.

**Work on Institutional and Policy Reform in Cross-Sector Areas Essential for Climate-Resilient Development Will Expand.** As climate becomes more variable, the WBG will support policy and institutional reforms to ensure that climate-related risks are adequately and continually addressed. The World Bank’s Social Development Department and Innovative Financing Unit are collaborating in a review of evidence from weather-based insurance schemes to find out if they are promoting greater social and livelihood resilience in practice. Climate resiliency is incorporated in multiple sectors—including agriculture, water resource management, and forests—in Indonesia, Vietnam, Brazil, and Mexico.

**The World Bank Group Will Sustain Efforts to Mobilize Additional Resources for Climate Adaptation.** The enormous financing gap for adaptation means that resource mobilization efforts need to be expanded, particularly for the poorest and most vulnerable countries. One recent funding source is the CIF’s Pilot Program for Climate Resilience. With more than $900 million endorsed for 11 PPCR programs (and the remaining 7 forthcoming), these pilots are gathering momentum. The program operates in nine pilot countries and two regional programs in the Pacific and Caribbean, which cover an additional nine countries (see Box 3.6 in Chapter 3). In coming years, effective implementation, monitoring, and distillation of lessons and sharing of experiences will be critical to inform the demonstration and scale-up—both within and beyond these countries. There is already compelling evidence that governance arrangements that have been put in place in these programs through highly consultative and inclusive processes are worthy of replication.

The World Bank will work with partners to deliver on the pilot experiences supported by the PPCR in 18 countries and will seek to expand these through additional transfers and by leveraging local development finance, considering the complementarities between adaptation and good development programs. These include expanding work on risk-pooling instruments through insurance schemes, domestic savings from boom years to endow disaster funds, domestic taxes, and international transfer payments.

**The World Bank Group Will Use a Range of Instruments and Financing Opportunities to Improve Governance and Social Accountability for Enhanced Climate Resilience.** In addition to the grants and concessional loans of PPCR, the World Bank is using DPLs and investment lending to support climate resilience. With all IDA Country Assistance and Partnership Strategies expected to address climate vulnerabilities, there will be stronger strategic dialogues for addressing climate resilience as part of countries’ development planning. The World Bank has initiated some work through DPLs at the city-wide level—for example in Mexico City, where a DPL is helping to finance the city’s movement toward local climate-resilient development. In Vietnam, the World Bank is working with local governments pioneering the use of social accountability approaches to ensure that incremental climate finance is put to effective use. In Mozambique, a recent DPL combines adaptation, mitigation, and disaster risk management and brings together different financial flows for multiple sectors, such as agriculture, coastal zone management, and water resource management. In the private sector, adaptation strategies for key sectors will be developed. Finally, in sub-Saharan Africa, clients are requesting a focus on capacity building and improved policies. The World Bank will seek to translate its work on resilience into concrete contributions to the planned medium-to-long-term National Adaptation Programs under the UNFCCC. It will continue to work with partners within programs it administers, such as PPCR, and where a joint results-matrix is effective for clients, the Bank, and donors, as in the Pacific Island countries.

**Strengthening Climate Adaptation Initiatives, Targeting Agriculture**

**Support to Green, Clean, and Resilient Agriculture Will Be Scaled Up.** With a 70-percent increase in food production needed by 2050, World Bank
support for agriculture will increase from an average of $2.9 billion in 2006–08 to $4.5–6.4 billion from 2012 and beyond. This will include a specific focus on agricultural programs that address the green, clean, and resilient dimensions. In Africa, the focus is on enhancing productivity and land and water management. In Kenya, for example, programs include support to community-based flood and watershed management, arid lands management, weather and climate services, agricultural productivity and commercial agriculture, and pilot investments on agriculture and forest carbon. In the densely populated countries of South and East Asia, the focus is on sustainable intensification, value-added enhancement, and diversification. In Bangladesh, one of the most vulnerable countries to extreme climate events, support emphasizes technological innovation, including salinity and flood-tolerant rice in coastal areas, drought-tolerant rice, and water productivity approaches. In Brazil, the emphasis is on balancing sustainable productivity increases with integrated soil fertility management, addressing land and forest degradation (including GHG emissions from land use change), and improved livestock management.

**SUPPORT FOR ADAPTATION PROGRAMS BY MAIN-STREAMING AND BUILDING FROM PILOT EXPERIENCES WILL EXPAND.** With GEF support over the last decade, the World Bank has backed projects that will serve as the basis for expanding support in tropical countries, islands, and drought-prone regions. In Latin America, for example, a number of pilot projects are improving information systems and capacity to anticipate extreme weather events. This has included improved tropical storm monitoring systems and early warning systems. Involving local communities in planning for climate resilience in Kiribati in the Pacific region has improved the country’s capacity to deal with extremes like storm surges. This approach has also been adopted in arid areas (see Box 5.6), meeting food security and land and water management needs. In some conflict and fragile countries where changing climate is an added stress, such as Somalia, Haiti, Afghanistan, and some countries in the Middle East, preliminary discussion is included in Interim Strategy Notes. As part of the Bank’s broader work on climate change, vulnerability assessments will be prepared as part of country climate profiles to provide better information for decisions on climate-resilient development.

**CO-BENEFITS WITH THE GREEN AND CLEAN AGENDAS WILL BE SOUGHT.** The “triple-win” of climate-smart agriculture contributing to resilience, low-carbon growth, and food security implies important synergies between adaptation and mitigation that need to be considered when designing and planning climate actions and evaluating their results. For example, forest carbon projects (reforestation and forest protection) that can be funded using incentives for climate change mitigation can also contribute to adaptation by increasing the resilience of local environments and communities. They contribute to strengthening the natural capital of rural communities participating in projects by recovering severely degraded lands, protecting water resources, and conserving biodiversity. The African Union has committed to integrating climate-smart agriculture into the Comprehensive African Agricultural Development Program, an approach to agricultural strategy and investment planning that has been endorsed by African Heads of State (AU and NEPAD 2010). Similar triple wins are possible in the oceans agenda—for example, protecting mangroves can lead to coastal protection, more sustainable fishing for local communities, and biodiversity gains—and will be sought.

**OPENING DOORS TO KNOWLEDGE AND LEARNING**

**THE WORLD BANK GROUP WILL CONTINUE TO MAKE THE LATEST KNOWLEDGE AND QUALITY DATA AVAILABLE FOR ACCELERATING RESILIENT DEVELOPMENT.** Through the Climate Change Knowledge Portal (CCKP) (http://climateknowledgeportal.worldbank.org), the World Bank will continue to provide access to climate information; climate risk screening tools; adaptation options at specific location, country, and sectoral levels; and e-learning aimed at development professionals. The portal allows policy makers to layer potential climate impacts for their countries, and to gain access to experiences of other countries in planning and adapting. The World Bank will partner with relevant specialized climate service agencies and organizations, such as the World Meteorological
Supporting climate-resilient Development in the Sahel and West Africa

In 2011, the GEF Council approved the Sahel and West Africa multisector program for $108 million. The program addresses major land degradation challenges common across the region. These include economic issues, such as food security, and environmental concerns like climate change. The countries in the program include those in the Sahel/Sahara region (Burkina Faso, Chad, Ethiopia, Mali, Mauritania, Niger, Nigeria, Senegal, and Sudan, as well as Benin, Togo, and Ghana) that have important savannah and forest systems linked to the Sahel/Sahara region. The goal is to expand sustainable land and water management in targeted landscapes and in climate-vulnerable areas in West African and Sahelian countries through expansion of investments in sustainable land and water management technologies, thus improving land use spatial planning at the watershed scale. It will use a spatial approach called the “mosaic approach,” which links productive landscapes, rangelands, parks, reserves, and communal lands and considers increased productivity, adaptation and mitigation to climate change, and improved livelihoods. The focus will be on managing trade-offs between multiple uses, such as demand for rich floodplains for grazing or crops or woodlands’ value for firewood and the need to retain watershed functions and protected areas.

Support for capacity building, knowledge generation, and learning-by-doing on climate change adaptation will increase. The World Bank has a growing portfolio on climate adaptation, including through engagement with other MDBs on the PPCR. These projects and programs include components supporting knowledge generation, targeted research, and improved data gathering, access, and management. In the coming decade, systematic
drawing of lessons and sharing of experiences across countries will support preparedness for managing climate risks. The goal is to improve knowledge exchanges, for example on ecosystem-based adaptation; hydro-meteorological services; integrated climate risk management approaches that link climate, disaster, and food security risks; and climate risk insurance mechanisms, including risk transfer, risk pooling, and strategies to enhance resilience of specific groups, such as women, who have been shown to be vulnerable to the impacts of climate.

**REGION-SPECIFIC RESILIENCE WILL BE A KEY FOCUS.** Given the challenges of water scarcity in the Middle East and in Arab countries, the WB has scaled up its technical assistance work on adaptation linked to water for that region. New knowledge and approaches to dealing with the risks of changing climate on livelihoods, ecosystems, and economies are also being explored. Learning and information exchange is being fostered between arid countries in the Middle East and countries in Latin America, for example, where growing demands require that better strategies for water management be planned.

**SMALL ISLAND STATES: MICRO COSMS FOR GREEN, CLEAN, AND RESILIENT DEVELOPMENT**

THE SMALL ISLAND STATES ARE AMONG THE MOST VULNERABLE TO ENVIRONMENTAL AND ECONOMIC SHOCKS DUE TO CLIMATE VARIABILITY AND ENERGY-PRICE VOLATILITY. They present challenges and opportunities. With respect to climate shocks, many small islands are examining what they can do to protect their coastlines against erosion and rising sea levels. They are also facing the need for more resiliency in disaster management, infrastructure, agriculture, and energy. High expenditure on fossil fuel translates into high energy prices of 20–40 cents per kilowatt-hour, making renewable sources of energy cost-competitive and offering the prospect of fiscal savings that could be redirected toward development and climate resilience. Although their small size, remote location in cyclone-prone latitudes, small economies, and low-lying coastlines contribute to their vulnerability, these factors may also potentially contribute to their success as exemplars of green, clean, and resilient development as they
provide a relatively low-cost, high-value option for demonstrating multisectoral sustainable development policy implementation at work. The regional programs in the Pacific and the Caribbean under PPCR provide a start, and in both cases the World Bank is working with other partners to scale up efforts in multiple countries. Work includes programs on climate-resilient infrastructure and on ecosystem and community-based adaptation, especially in coastal areas.

**THROUGH IDA AND THE PPCR, THE WORLD BANK AND ITS PARTNERS ARE WORKING REGIONALLY TO ASSIST THE CARIBBEAN ISLANDS IN ADDRESSING THESE ISSUES, BUT THIS WORK MUST BE SCALED UP TO INCLUDE ALL ISLAND STATES.** During IDA 15, the Regional Disaster Vulnerability Reduction Project was approved by the Board under a single project for Grenada and Saint Vincent and the Grenadines, which was the largest project ever supported by the World Bank in these countries.

**SMALL ISLAND STATES, IN PARTICULAR ARCHIPELAGIC STATES, COMMAND DISPROPORTIONATELY LARGE EXCLUSIVE ECONOMIC ZONES (EEZ); THEY ARE “GREAT OCEAN STATES” AND NATURAL PARTNERS FOR THE BANK’S INITIATIVE ON A GLOBAL PARTNERSHIP FOR OCEANS.** For example, Tonga—a Pacific island state consisting of 150 islands and a population of 100,000—has a land mass of 688 km² and an EEZ of 700,000 km², which is a 1:1000 ratio. This is equivalent to the EEZ of the United Kingdom, which has a land mass of 243,000 km² for a population of 62 million (a land mass to EEZ ratio of approximately 1:3). The WBG will therefore partner with small island states in its Global Partnership for Oceans to ensure that these nations are helping to set the agenda on oceans while extracting the maximum sustainable value from their marine resources to meet their development needs. This could include support for partnering on global advocacy, regional and national policy frameworks for better governance of their EEZ, better management of seascapes and marine protected areas, reduction of land-based pollution, investment options for alternative livelihoods of traditional fishers (including aquaculture), and coastal zone management harnessing (for example, blue carbon revenues).

**THE SIDS DOCK PROGRAM EXEMPLIFIES GREEN, CLEAN, AND RESILIENT APPROACH TO DEVELOPMENT.** The SIDS DOCK Support Program, developed by the Alliance of Small Island States, supported by a $29.5 million envelope from Denmark and Japan and facilitated by UNDP and the World Bank, assists with the introduction of renewable energy and energy efficiency among small island developing states. It is focused on improving the enabling environment, removing barriers, and implementing policy reforms and business models with potential for scale up. A growing project pipeline valued at over $25 million is leading to a wide-ranging and exciting portfolio of innovative and socially inclusive developments, including a regional energy regulatory authority to overcome barriers, interisland power-supply interconnectors to broaden energy markets, off-grid solar for remote atolls to improve energy access, and achievement of Millennium Development Goals.