Enhancing Competitiveness and Resilience in AFRICA

An Action Plan for Improved Natural Resource and Environment Management
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Foreword

The story of Africa’s economic growth over the last decade has been impressive. In order to sustain this growth however, sound, environmental management, including that of natural capital, will be vital and must be integrated into the broader development agenda. Land degradation affects the livelihoods of nearly 500 million Africans and deforestation rates, caused largely by subsistence agriculture, average 0.5 percent annually. Over 60 percent of people living in urban areas are in slums, exposed to environmental health risks and with poor access to basic sanitation and drainage services. Africa accounts for only 4 percent of global greenhouse gas emissions, but climate change poses new risks to resilient growth for a continent whose citizens are already vulnerable to the impacts of drought, flood, and extreme heat. Although the development of oil, gas, and mining brings opportunities, unsafe mining practices degrade land, pollute rivers, and threaten human health. Improving access to infrastructure is imperative, but this challenge must be met in a manner that is environmentally responsible. Africa’s environmental management institutions face challenges in providing a predictable environment for responsible investment, and in demonstrating accountability and service delivery to citizens.

This report demonstrates the important role that sound environment and natural resource management plays in Africa’s future, and how this objective aligns squarely with the goals of the World Bank’s strategy for Africa¹ including the pillars of enhanced jobs and competitiveness, and increased resilience and risk management, built upon the foundation of improved capacity and governance. The report builds on a body of strategic documents. The World Bank’s Environment Strategy² illustrates how environment sustains development, and makes the case for moving to a green, clean, and resilient development path for all. The 2010 World Development Report on Climate and Development argues for climate-smart development to sustain growth and poverty reduction goals. In addition, the ongoing work on Green Growth demonstrates the role that responsible management of natural capital plays in sustainable and inclusive growth.

This action plan addresses six major themes; managing renewable natural resources: land, water, forests and fisheries, for growth and sustainability of ecosystems; improving the livability of the urban environment; making development climate resilient and promoting low carbon growth; managing development of oil, gas, and mining sustainably; enhancing access to energy and water and increasing connectivity while mitigating environmental risks; and improving the enabling environment for responsible investment through

¹ “Africa’s Future and the World Bank’s Support for it”, World Bank, March 2011.
transparent environmental regulations and accountable, competent institutions. Within a country-driven agenda, partnerships and cross-sectoral collaboration are key to implementation.

This report is the outcome of contributions by many staff in the Africa region. It was written by Marjory-Anne Bromhead with contributions from Herbert Acquay, Peter Kristensen, Salimata Follea, Veruschka Schmidt, and Jennifer Wang, with maps produced by AFRSSHD; and under the overall guidance of Idah Pswarayi-Riddihough.

Jamal Saghir
Director, Sustainable Development
Africa Region, World Bank
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## Acronyms

<table>
<thead>
<tr>
<th>APL</th>
<th>Adaptable Program Loan</th>
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<tr>
<td>BDNES</td>
<td>Brazilian Development Bank</td>
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<td>BRT</td>
<td>Bus Rapid Transit</td>
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<td>CAADP</td>
<td>Comprehensive Africa Agriculture Development Program</td>
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<td>CPIA</td>
<td>Country Performance and Institutional Assessment</td>
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<td>CTF</td>
<td>Clean Technology Fund</td>
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<td>DFID</td>
<td>Department For International Development</td>
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<td>DPL</td>
<td>Development Policy Loan</td>
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<td>EA</td>
<td>Environmental Assessment</td>
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<td>EIA</td>
<td>Environmental Impact Assessment</td>
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<td>EITI</td>
<td>Extractive Industries Transparency Initiative</td>
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<td>ESMAP</td>
<td>Energy Sector Management Assistance Program</td>
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<tr>
<td>FPD</td>
<td>Financial and Private Sector Development Unit</td>
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<td>FLEGT</td>
<td>Forest Law Enforcement, Governance and Trade</td>
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<td>FCPF</td>
<td>Forest Carbon Partnership Facility</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GHG</td>
<td>Greenhouse Gas</td>
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<td>IDA</td>
<td>International Development Agency</td>
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<td>IEG</td>
<td>Independent Evaluation Group</td>
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<td>IFAD</td>
<td>International Fund for Agricultural Development</td>
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<td>JICA</td>
<td>Japan International Cooperation Agency</td>
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<tr>
<td>LCR</td>
<td>Latin America and Caribbean Region</td>
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<td>MDG</td>
<td>Millennium Development Goals</td>
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<td>MIC</td>
<td>Middle-Income Country</td>
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<td>MMBTU</td>
<td>Million Metric British Thermal Unit</td>
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<tr>
<td>MNA</td>
<td>Middle East and North Africa Region</td>
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<tr>
<td>NAMA</td>
<td>Nationally Appropriate Mitigation Action</td>
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<td>NAPA</td>
<td>National Adaptation Programs of Action</td>
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<td>NEIP</td>
<td>Nigeria Electricity and Gas Improvement Project</td>
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<tr>
<td>OECD</td>
<td>Organization for Economic Co-operation and Development</td>
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<td>PES</td>
<td>Payments for Environmental Services</td>
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<tr>
<td>PREM</td>
<td>Poverty Reduction and Economic Management Network</td>
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<td>PROGEDE</td>
<td>Sustainable and Participatory Energy Management Project</td>
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<td>PROFISH</td>
<td>Global Program on Fisheries</td>
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<td>PROFOR</td>
<td>Program on Forests</td>
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<tr>
<td>PPP</td>
<td>Public-Private Partnership</td>
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<tr>
<td>REDD</td>
<td>Reducing Emissions from Deforestation and Forest Degradation</td>
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<tr>
<td>SDN</td>
<td>Sustainable Development Network</td>
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<tr>
<td>SEA</td>
<td>Strategic Environmental Assessment</td>
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<td>SME</td>
<td>Small and Medium Enterprise</td>
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<tr>
<td>SPCR</td>
<td>Strategic Program for Climate Resilience</td>
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<td>TA</td>
<td>Technical Assistance</td>
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<tr>
<td>TFESSD</td>
<td>Trust Fund for Environmentally and Socially Sustainable Development</td>
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<tr>
<td>UNDP</td>
<td>United Nations Development Program</td>
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<tr>
<td>WAVES</td>
<td>Wealth Accounting and Valuation of Ecosystem Services</td>
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<td>WWF</td>
<td>World Wildlife Fund</td>
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Chapter I

Introduction and Summary

The objective of this action plan is to demonstrate the role that sound environmental and natural resource management will play in implementing the goals of the World Bank’s strategy for Africa, and more specifically in addressing the two pillars of enhanced jobs and competitiveness, and increased resilience and risk management, built upon the underlying foundation of improved capacity and governance.

The document is guided by a series of related World Bank strategies and action plans for elements of sustainable development that have been developed at both regional and national level, including energy, transport, agriculture, and mining action plan updates, and the strategy for Africa’s development in a changing climate. It is also consistent with and guided by the World Bank’s Environment Strategy, which focuses on the pillars of green, clean and resilient development. In addition, it draws on the thinking behind the work being done on green economy and green growth, which underlines the importance of natural and social capital, innovation, knowledge and efficiency gains, and resilience and inclusiveness as sources of growth and development in addition to physical and human capital.

This action plan will argue for integrating sound environmental management, including management of natural capital, into the broader development agenda. It addresses six major themes or business lines for addressing competitiveness and resilience through improved environment and natural resource management:

- Managing renewable natural resources for growth and ecosystems sustainability;
- Improving the livability of the urban environment;
- Making development climate resilient and promoting low carbon growth;
- Managing development of mining, oil, and gas sustainably;

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- Enhancing access to energy and water and increasing connectivity while mitigating environmental risks; and

- Improving the enabling environment for responsible investment through transparent, environmental regulations and institutions.

This document is an action plan addressing environmental sustainability and development across all sectors in the Africa region. This action plan will address the role of renewable natural resource management, climate resilience, and environmental governance in more detail compared to the other business areas.

Five key messages regarding implementation:

1. **Partnerships need to be a core part of the implementation framework**, both in terms of analytical underpinnings and regarding investments. Partnerships need to be built within the Bank through cross-sectoral collaboration, and outside of the Bank with financing partners, foundations, civil society organizations, and the private sector.

2. **A range of tools, lending and financing instruments is available** to prioritize and mainstream environmental sustainability, including analytical tools such as estimating the economic costs of natural resource and environmental degradation, and lending tools such development policy lending. Improving data and access to information is key.

3. **Much of environmentally sustainable development is “about” mainstreaming environmental sustainability into broad sector development programs**, such as infrastructure, agriculture, mining and energy, urban development and private sector development. This requires cross-sectoral collaboration between the World Bank’s Sustainable Development Network (SDN), Poverty Reduction and Economic Management Network (PREM) and Financial and Private Sector Development (FPD) unit.

4. **Safeguards have a role to play but the objective must be to move from safeguards to sustainability** through improved environmental governance, supported by “bottom up” transparency and accountability initiatives, and focus on results.

5. **Sustainable ecosystems management** (including land and water) underlies development in other sectors and is key to their long-term resilience: enabling policies for and investment in ecosystems resilience and restoration must be part of the Africa strategy.
Chapter II

Environment and Natural Capital in a Green Growth Context

Newer economic thinking is increasingly challenging earlier “grow now and clean up later” approaches. Although African leaders are increasingly committed to improving environmental management within a broader growth and development framework, there are still a number of arguments, based in part on the historical growth paths of some OECD countries for “growing first and cleaning up later”, and in part also on traditional growth theory. Traditional growth theory modeled economic growth as being derived from changes in physical and human capital and technology, with depletions in natural capital being compensated for by increases in other forms of capital. Over the last 30 years, there has been increasing concern about the potential constraints to growth caused by natural resource depletion and limitations in the capacity of the planet to absorb waste. There has also been more discussion about irreversible damage and “lock-in effects,” with the implication that “cleaning up later” may in many circumstances be much more costly than “avoiding degradation, eco-systems loss or pollution in the first place.”

More recently, green growth theory has seen the conservation and restoration of renewable natural capital, together with sound environmental policies, as a source of growth and welfare gains. It argues furthermore that accurate valuation of natural capital and eco-systems services is challenged by market and governance failures, including asymmetries in knowledge, externalities, and ill-defined property rights, as well as spatial trade-offs, and trade-offs between short term gains from depleting natural capital and longer term productivity damage. Policies that provide incentives for correcting market failures can have both environmental and productivity gains. Examples include support for improved urban transport management, which can both reduce pollution and reduce travel costs; soil conservation, which can both improve downstream watershed management and

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6 The well-known environmental “Kuznets curve,” for example, reflects structural transformation of an economy. As economies transform from agrarian to more industrial, environmental quality deteriorates; but as incomes grow and economies become more service oriented, resources are available for environmental cleanup and environmental quality improves. These paragraphs draw heavily on Hallegate, Heal et al, “From Growth to Green Growth” Policy Research Working Paper 5872, The World Bank, November 2011.

increase agricultural productivity; and transparent land tenure regimes, which provide an incentive for reinvesting in land.

Green growth also emphasizes the role of social and institutional capital and sound governance. Transparent environmental regulations and strong institutions provide a solid enabling environment for sustained growth. They provide a framework for responsible investment as well as for long-term investment. Green growth stresses the importance of efficiency gains along with knowledge and innovation in achieving green growth outcomes; off-grid solar energy and fuel-efficient stoves are examples. This document draws on the thinking behind green growth as it develops the action plan.

Analytical work on the economic costs of environmental degradation can help identify priorities. This type of analysis, however, has not been carried out in Africa as systematically as in some other regions. The 2003 study on Morocco in the MNA region, for example, estimated the losses as equivalent to 4.6 percent of GDP, with air and water pollution accounting for about 40 percent of the cost and coastal zone degradation, land and forest degradation, poor solid waste management, and the global environment for the remainder. Morocco, with Bank assistance, has invested heavily in recent years in improving solid waste, water and sanitation, and improved natural resource management. In Ghana, where a similar analysis was carried out in 2007, the cost to GDP of environmental degradation was estimated at 10 percent annually, with forests, wildlife, agricultural lands, and fisheries accounting for about six percent and poor water and sanitation and air pollution about four percent. Analytical work on land degradation in Nigeria estimated the cost to GDP at nine percent and has helped lay the basis for a greater focus on addressing erosion in the current Country Partnership Strategy.

There is also growing recognition that natural capital is under-valued in traditional GDP accounting systems. A number of studies have suggested using “comprehensive wealth accounting systems” which take into account natural capital depletion to arrive at adjusted net savings rates. The Wealth Accounting and Valuation of Ecosystem Services (WAVES) initiative aims to incorporate natural capital accumulation and depletion into national accounting systems through piloting the approach in a number of OECD and developing countries, including two in Africa (Botswana and Madagascar).

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9 WAVES (Wealth Accounting and Valuation of Ecosystem Services). Please visit http://www.wavespartnership.org to learn more about the WAVES Partnership.
Africa’s Environment and Natural Resources: Opportunities and Challenges for Growth, Jobs and Resilience

Chapter III

Africa’s renewable and non-renewable natural resources are major drivers of economic growth, but are also under pressure.

Agricultural lands and rangelands contribute 15 percent of GDP and 60 percent of employment in the region, but about 25 percent of agricultural land is severely degraded. Agriculture also provides 40 percent of export earnings and is the basis for a growing agro-processing industry. With Africa’s population expected to double by 2050, meeting the food security needs of citizens is a top priority. Agricultural productivity is dependent on underlying soil fertility and availability of sufficient, good quality water. Soil degradation reduces fertility and productivity, and reduces resilience by making these degraded soils more vulnerable to the impact of drought, flood, and heat stress. More broadly, land degradation also affects infrastructure, contributing to siltation of reservoirs and erosion of roads, housing, and other assets. On average three percent of Africa’s GDP is lost annually because of soil and nutrient loss on farmland alone. However, there is experience in sustainable land management, which can be scaled up with the right incentive measures: conservation tillage, for example, is practiced on over 300,000 ha in Zambia, increasing yields and conserving soil fertility.

Forests cover about one-quarter of the land area of Sub-Saharan Africa and provide 65 percent of energy needs as well as other timber and non-timber products and ecosystem services but deforestation rates are one percent annually. Eighty-one percent of African households are dependent on fuel-wood and charcoal for their heating and cooking needs; forests are the basis for a growing domestic timber industry in many countries. The fuel wood and charcoal industry is estimated to contribute five percent of GDP in Rwanda for example. African forests account for 23 percent of the global carbon stock in forests and play a role in broader climate regulation, but their conservation is also crucial.
to resilience and adaptation because of the strong role they play in watershed and fertility management. They constitute the “water towers” of Africa. Deforestation contributes to loss of resilience through erosion, downstream flooding, and loss of watershed regulation function, as well as to increased global carbon emissions. Household air pollution, caused largely by smoke from burning of woody biomass for cooking and heating using unimproved stoves, is the principal cause of 400,000 premature deaths in Africa—40 percent of the estimated world total from this source.11 A number of countries, including some with high population pressure such as China and Vietnam, have succeeded in reversing deforestation over the last two decades. And there are positive experiences in Africa in sustainable fuel-wood management (Senegal), community forest management (Tanzania), and landscape restoration (Rwanda and Ethiopia).

Marine and coastal fisheries make substantial contributions to the nutritional needs of people and to employment and exports in West and East African countries but are over-exploited: there is also great potential for well-managed aquaculture. They account for about 10 percent of jobs in Ghana for example. Fisheries employ directly an estimated 25 million people throughout the continent. They contribute 23 percent of protein (far more in some countries) and constitute one of the region’s largest agricultural product exports, with a net export value of approximately US$1.7 billion. All other agricultural products together amount to a net trade balance of approximately US$0.6 billion. Marine fisheries are important in all the West African countries, but also in Gabon, Namibia, South Africa, Mozambique, Tanzania, Kenya, Madagascar, Comoros, Seychelles, Somalia, and Sudan. Inland fisheries are important in all the Great Lake countries but also for people living along rivers and smaller bodies of water.

Functioning coastal ecosystems also help protect coastal cities and infrastructure from flooding and provide shelter for juvenile fish. However, destruction of coastal mangrove forests has increased the vulnerability of coastal settlements to flooding. In some areas, pollution—particularly from offshore oil drilling, industrial and municipal waste—has degraded these ecological systems. Furthermore, due to poor governance and open access regimes, more than 90 percent of Africa’s commercial marine fisheries are fully or over-exploited. Additionally,
many countries lack the underlying capacity to capture the value of these resources locally, or to take sufficient advantage of the potential for value added. Artisanal fisheries pose particular challenges, which require close stakeholder involvement and participatory approaches. Rights-based approaches with strong local participation, improved monitoring, and support for “moving up the value chain” can provide solutions. The West Africa Fisheries program aims to improve resource management and enhance value chains.

Aquaculture is the single most rapidly growing food-sub-sector globally, now accounting for half of the total quantity (50 million tons out of 100 million tons) of fish consumed. But production in Africa is currently only about 150,000 tons, despite Africa’s ample water resources. In Ghana improved aquaculture management on Lake Volta is receiving attention; there is also scope for extending experience on lake fisheries management from Lake Victoria to other lakes.

Freshwater resources provide key services but more than half of Africa’s people live in areas facing water scarcity or stress. Freshwater resources in Africa (both surface and ground water) provide water for drinking, sanitation, fish, hydropower, agriculture, and industry. Wetlands, floodplains, and watercourses also provide important ecosystem functions. These shortages highlight the importance of sound watershed and river basin management; groundwater and freshwater lakes and rivers, which are essential for the region’s food security, economic growth, and livelihoods. Strong analytical work has increased knowledge about key river basins (Zambezi, Nile, Niger, and Senegal) but regional programs face challenges in implementation as compared with country programs.

The African continent is rich in biodiversity—the basis for the environmental services on which life depends—but biodiversity is under-valued. Africa’s coastlines and landscapes, and the wildlife they harbor, need to be managed sustainably for local livelihoods and jobs from tourism but also for the regulating and supporting services provided by biodiversity, including pollination, the habitats of the wild relatives of species that are used for a wide range of purposes, and cultural values.

Nature-based tourism is key to employment and foreign exchange earnings in many African countries; in Zambia, it is the second source of foreign exchange earnings after copper, for example. However, ecological diversity in landscapes and seascapes is under increased human pressure. Loss of biodiversity leads to reduction in the
resilience of the land and water ecosystems on which humans depend for survival and also makes these systems more vulnerable. Valuing biodiversity is especially challenging because of the difficulty of costing irreversible loss of species or ecosystems, and because of the strong “public good” nature of the environmental services provided.

**Mineral resources contribute to jobs and exports but pose environmental and social challenges.** Mining has a long history in Sub-Saharan Africa. This region is an important source of many of the world’s precious stones and metals such as gold, diamonds, uranium, chromium, nickel, bauxite, and cobalt, and for coal as well. The mining sector is a major source of employment and foreign exchange for nine African countries; in DRC, it is estimated that 16 percent of jobs are in mining, largely from the artisanal sector. However, unsafe mining coupled with environmentally damaging mining practices pollute land and water bodies and threaten human health. Oil and gas production has become an increasingly important contributor to the economies of nine African countries, with new resources under development in three more. Pollution associated with the oil and gas industry has badly damaged the productive capacity of land and water bodies in some countries. The approach supported by the Extractive Industries Transparency Initiative (EITI), combined with initiatives that support improved approaches to artisanal mining can provide solutions.

Urban areas provide for concentration of human capital and are key to vibrant economic growth but poorly managed urban growth has substantial environmental and economic costs.

**Africa is the most rapidly urbanizing continent, with urban population growth rates above four percent per annum,** and citizens living in urban areas accounting for 40 percent or more of the population in over 15 countries. Potentially, also people living in urban areas are more efficient consumers of environmental resources. Citizens in urban areas have better access to services than those in rural areas; 85 percent of citizens living in towns, for example, have access to improved water sources, compared with 51 percent in rural areas.¹²

**But 62 percent of Africa’s urban population lives in slums, and poor sanitation, drainage, and solid waste management pose substantial health risks and contribute to urban flooding, ponding of stagnant water, and incidence of water-borne diseases.** Slums built on flood plains or fragile sloping lands are vulnerable to collapse or flooding during rainy periods. Low-lying coastal cities are especially vulnerable to coastal flooding and climate change. The damage caused by the 2009 floods in Dakar affected 360,000 people, and like those in Cotonou, Benin in 2010, were linked to poor urban planning, inadequate drainage, and ineffective solid waste management. Untreated industrial and urban waste and wastewater contaminate rivers, reducing the quality and availability of water for productive purposes. Dust and traffic-related pollution pose additional health burdens.

Improving connectivity as well as access to energy, water, and sanitation is key to Africa’s growth but must be managed sustainably.

**Improved transport infrastructure is key to Africa’s growth** and has environmental benefits (in reduced loss of agricultural products in transit for example, or reduced vehicle

An Action Plan for Improved Natural Resource and Environment Management

operating costs and emissions), but careful design is necessary to avoid erosion, watershed degradation, or habitat loss. In addition, poor urban transport management increases urban air pollution.

**In addition to enhancing economic growth, access to modern energy sources can improve the environment** by reducing reliance on fuel-wood and potential associated deforestation, and reduce the burden of respiratory disease caused by using “dirty fuel.” Increased grid access can reduce greenhouse gas (GHG) by reducing reliance on oil-fired generators (used by 60 percent of urban households and most private enterprises in Nigeria for example), but coal-fired power can increase air pollution as well as greenhouse gas emissions. Hydroelectric energy is regarded as a clean energy source but can damage watershed functions and cause habitat loss if not carefully designed and managed.

**There has been more progress in addressing water supply than sanitation in Africa in the last decades**, despite the environmental health and related productivity benefits of improved sanitation; only 31 percent of Africans have access to an improved sanitation source, compared with 60 percent to an improved water source. Sewerage and sanitation have been relatively neglected areas in part because of the “externalities” associated with these facilities, because of cost and affordability issues, which are more challenging for sewerage than for water supply, and because of institutional and behavioral constraints.

**The green growth report emphasizes the key role that well designed, operated and financed infrastructure plays in green growth strategies**, in part because much infrastructure development has long term, “lock-in” impacts which may be very costly to reverse.

Enhanced resilience to climate-related natural disasters is key to reducing risk and enhancing growth in Africa but there are also opportunities for low carbon growth.

**African citizens, directly dependent on land and water for their survival, are vulnerable to the impacts of climate variability, especially drought but also floods.** The tragic impacts of the recent drought in the Horn of Africa highlighted the vulnerability of many Africans to weather related events. GDP growth and rainfall are closely correlated in many countries. Extreme weather events, both floods and droughts, are expected to increase in both frequency and intensity. With temperatures projected to rise by 2°-4°C during this century, Africa is also expected to face significant variations in precipitation, with agriculture and natural ecosystems facing more heat and dryness stress. The sea level is expected to increase by 20–50 cm by 2050, exposing the continent’s coastal areas to increased
flooding. The economic costs of adaptation to climate change for Africa are estimated at about US$10 billion per year over the 2010–2020 decade, rising thereafter. The people most affected are those dependent on agriculture and fisheries, and people in low-lying coastal urban areas. Programs addressing climate resilience in urban areas are under implementation or preparation, for example in Mozambique and Senegal, and in rural areas through support to sustainable land and water management, improved weather and climate services and climate-smart agriculture in Niger, Zambia, Mozambique, Kenya, and Rwanda.

There are often synergies between low carbon growth, resilience and broader growth strategies in Africa. Thirty percent of GHG emissions are caused by land degradation, land use change, and deforestation, and the strategies to reduce emissions from these sources (sustainable landscape management, agro-forestry, watershed restoration) also increase resilience and enhance productivity (the “triple win of climate smart agriculture”\(^{13}\) is an example). The proposed Forest Investment Program in DRC, for example, aims to reduce deforestation by supporting fuel-wood plantations and agro-forestry in the vicinity of major cities. The Nigeria clean technology program focuses on improved urban transport, energy efficiency, and reduced losses in energy transmission (it does not directly address gas flaring, which presents even greater institutional challenges).

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\(^{13}\) Policy Brief: Opportunities and Challenges for Climate-Smart Agriculture in Africa, World Bank et al.
Chapter IV

The Role of Environmental Governance and Institutional Capacity in Growth and Resilience

The Africa strategy emphasizes the link between governance and capacity, and the importance that transparent, accountable institutions and clear, simple regulations play in enabling long-term sustainable growth.

Governance is generally defined as the process by which decisions are made and implemented. The Africa Regional Strategy emphasizes also the link between weak governance and low public sector capacity, the importance of citizens’ voice and accountability mechanisms, but the importance also of broad based ownership for reform, and the need to keep governance/capacity building programs targeted and simple, while recognizing that sustained improvement is a long-term agenda.

Country Performance and Institutional Assessment (CPIA) ratings have improved overall in African countries over the last 10 years, but not for environmental performance. The analysis provides a useful tool for assessing the performance of environmental governance at country level. CPIA ratings have improved, especially for economic and structural policies, but have stagnated for social and institutional performance. Indicator eleven—environmental performance—showed the greatest deterioration of any of the 16 indicators. The indicator covers areas such as the quality of environmental assessment, cross-sectoral coordination, public information and participation in environmental concerns and decisions, progress on climate change, and prioritization of environmental issues. It also covers progress with addressing key environmental problems such as air pollution, waste, coastal and marine management, and water resource, biodiversity, and renewable natural resource management.

Environmental performance of most middle-income countries in Africa (South Africa, Botswana, and Mauritius) is good, highlighting the importance attached by middle-income countries to sound environmental management because of the key role this plays in long-term growth and quality of life. Core to the development agendas of many African countries is to become prosperous, middle-income countries over the next 10 to 20
years; the experience of middle-income countries (MICs) illustrates that sound environmental management must play a key part in reaching these goals.

Environmental regulations clarifying environmental assessment and due diligence requirements for new investments can help attract responsible long-term investment.

**Clear rules of the game improve the enabling environment for responsible private sector investment and ensure that infrastructure, energy, mining, and urban development do not damage underlying resilience.** The Bank has a role to play in “mainstreaming” environmental management and mitigation measures into infrastructure investment. Examples include the Dakar-Damniado toll-road in Senegal, which included provisions for protecting an urban forest and re-siting and improving a solid waste dump, as well as resettlement and compensation of local people, and a roads project in DRC, which incorporated measures to address potential deforestation and protect local livelihoods in its design.

While in many countries there is adequate environmental legislation, the constraint is implementation capacity and local communication and accountability mechanisms.

**There are often challenges in implementation between different levels of government or sectors.** Responsibilities may be delegated to local governments and municipalities without adequate capacity to implement; or responsibilities may be given to key sectoral ministries responsible for much investment (transport, energy, mines, and water management). Funding arrangements to ensure environmental due diligence are also often lacking. Transparent regulations and strong, accountable institutions in this area also reduce the risks and costs of doing business for international financing agencies, including the Bank. This area of public sector management would benefit from receiving more attention.
Sound institutions for oversight of natural resource management increase the quality of services that these resources can provide (for food, water, and fuel). They support the “regulating function” (for flood and watershed management and climate regulation) of natural resources as well as their underlying “life-cycle” and “cultural services” (for biodiversity, recreation). And transparent systems increase “voice” and mitigate conflict.

There is good experience in Africa in “bottom-up” governance through participatory approaches to managing and monitoring natural resource use (in farmer managed forest regeneration in the Sahel, for example) as well as in protected area management (e.g., in South Africa and Namibia).

Key governance initiatives such as EITI ++ and FLEGT provide opportunities for improving environmental performance.

These initiatives help raise the profile of governance and set a standard of comparison between countries. The Extractive Industries Transparency Initiative (EITI ++) sets a global standard for transparency in governance of oil, gas, and mining, including transparent environmental and social performance standards. Even countries with difficult governance challenges such as DRC are actively engaged in EITI ++. The Forest Law Enforcement, Governance and Trade (FLEGT) initiative sets a standard for transparent management of internationally traded timber products. In Gabon development policy lending has helped improve the transparency of forest concession management and address fisheries governance. Translating these standards into approaches adapted to artisanal mining and domestically traded timber and other forest products is still work in progress.

The global environment agenda provides opportunities to address domestic, regional and global environmental challenges, but needs adequate capacity and incentives.

African countries have been active in the global environment agenda and most are participants in the major international environmental conventions, including those related to climate change, conservation of biological diversity, desertification, and disposal hazardous wastes. The Congo basin Countries are engaged in a regional program to address Reduced Emissions from Deforestation and Forest Degradation (REDD–readiness), for example, and 17 African countries are engaged in the Forest Carbon Partnership program, in anticipation of increased climate-related funding. On the other hand, the percentage of land area formally designated for biodiversity protection has increased only marginally since 1990, from 10.7 percent to 11.5 percent. Implementation of programs to address hazardous wastes (such as obsolete pesticides) has been a struggle in many countries. It remains a challenge to translate international agreements into developing adequate local capacity to ensure implementation on the ground, as well as to mainstream implementation into core economic development agendas. The key is to design programs, which, while addressing global public goods, also meet countries’ domestic development goals. The “great green wall initiative” in support of sustainable land management in the Sahel aims to meet the dual goals of combating desertification and enhancing landscape productivity, for example. The Clean Technology Fund program in South Africa aims to support low carbon growth while meeting domestic energy needs.
Chapter V

A Strategic Action Plan

This action plan proposes six key “action areas” that reflect the environmental challenges in Africa and the cross-sectoral nature of environment and natural resource management. They build on key action plans already developed for agriculture, energy and transport and include:

- Managing renewable natural resources for growth, resilience and ecosystems sustainability;
- Improving the livability of the urban environment;
- Making development climate resilient and promoting low carbon growth;
- Managing development of mining, oil, and gas sustainably;
- Enhancing access to energy and infrastructure and increasing connectivity while mitigating environmental risks; and
- Improving the enabling environment for responsible investment through transparent, environmental regulations and institutions.

The action plan takes very much into account the core messages of the World Bank’s Environment Strategy and reflects thinking articulated in the Green Growth Strategy. The Environment Strategy emphasizes green, clean, and resilient development. To clarify, in this case, Green means efficient, incorporating the value of natural assets; Clean means reduced pollution, healthy and low GHG emitting, and Resilient means capacity to adapt to shocks, climate change and to make needed changes in production and consumption patterns. The Green Growth strategy emphasizes the links between green growth and broader growth policy, but emphasizes the need to tackle market and governance failures, entrenched behaviors and social norms, and up-front financing costs. It highlights the role of innovation and investment in human, natural and physical capital.

5.1 Managing Natural Resources for Growth, Resilience and Eco-Systems Sustainability

African countries need to invest in and restore natural capital in order to sustain growth and welfare gains.

Land and water management is key at both the broader watershed and landscape level and on-farm, in order to restore and maintain the resilience and productivity of productive lands and river basins.

The approach needs to be adapted to different ecosystems, population densities, levels of degradation, and production needs. In densely populated rural landscapes such as Rwanda, parts of Kenya, Madagascar, and Malawi the priority is “sustainable productivity increases” on fertile productive lands including agro-forestry, water harvesting, and irrigation, combined with broader erosion control measures along stream beds and reforestation of steeply sloping, higher lands (see Box 5.1). In heavily degraded landscapes such as southern Nigeria, an approach combining structural, biological, and community-based approaches is more appropriate. In the Sahelian countries the priority is, rather, sustainable land and water management through on-farm measures to conserve water, reduced tillage, agro-forestry, improved fuel wood harvesting and processing, improved pasture management, and post-harvest fire management. In some circumstance, a regional approach is appropriate, as in the Lake Victoria Basin.

Land and water management is a core pillar of the Agriculture Action Plan and includes investing in land administration and property rights, irrigation, sustainable land and water management (addressed above) and investing in climate-smart agriculture (see also Section 5.3). Managing food security and vulnerability includes support for community-driven development better targeted at agriculture, disaster and drought management and early warning systems, and support for productive social safety nets. This pillar is directly linked to the climate adaptation and resilience agenda.

A second major pillar, productivity and technology enhancement requires addressing core environmental challenges. These include phyto-sanitary management, food safety,

Box 5.1: A Landscape Approach to Sustainable Productivity Enhancement in a Land-Scarce Country: Rwanda

Rwanda, with less than 0.2 ha of arable land per person, population growth rates of 2.7 percent per annum and 83 percent of the population living in rural areas, is one of the most “land-scarce” countries in Africa. Yet it has managed to reverse deforestation while improving agricultural productivity and value added, and is addressing broader landscape management. Its Land Husbandry, Water Harvesting, and Hillside Irrigation Project seeks to manage rainfall so that it causes less hillside erosion, through terracing, improving the soil under cultivation, managing water runoff, and in some cases developing irrigation systems. It seeks to empower farmers by helping them develop farmer groups and gain access to credit, also facilitating agricultural commercialization and cash earnings. Erosion control means fertilizer and crops are less likely to be washed downhill. The incorporation of fodder trees helps farmers to incorporate livestock into their farming systems—although buying cows is still a challenge for many. The program project has received financial assistance from a range of sources including IDA (US$34 million), the Global Agriculture and Food Security Program (US$50 million) and other development partners. It is being gradually scaled up, watershed by watershed, to cover the whole country.

safe handling of pesticides, and animal health considerations including those that are water and climate related. Sustainable intensification can also meet a win-win objective of improving productivity on fertile land and releasing fragile or less fertile land for ecosystems and protection functions. As production systems intensify, there will be opportunities to avoid, by careful policies and incentives, the environmental costs of intensive production (groundwater depletion, water pollution, salinity and soil degradation) that other regions have experienced.

Water resource development plays a key role also in the clean energy access (hydropower) and agricultural productivity (irrigation) agenda. Good environmental management practice generally recommends that these developments be seen in the broader context of river basin management, with upstream and downstream impacts being assessed, as well as local impacts on watershed functions, erosion and water availability for other purposes. Regional approaches can often complement national programs, as in the Lake Victoria, Zambezi, or Niger basins (see Box 5.2).

Improved land and water management is a priority in all African countries.

Fisheries, coastal zone management and aquaculture can contribute substantially to the jobs and competitiveness agenda in Africa, but underlying governance and capacity constraints need to be addressed.

**Approaches need to be adapted to particular country circumstances and fisheries.** Both enhancing value-added chains and aquaculture need more focus. The underlying resource

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**Box 5.2: Malawi – Watershed Management for Protection of Hydrological Infrastructure and Farmland**

The Lake Malawi-Shire river basin is Malawi’s most important natural resource system and provides water for 95 percent of Malawi’s power generation, agriculture, fisheries, transport, tourism, and urban water supply. Eighty-five percent of Malawi’s population depends on agriculture for their livelihood. Deforestation, soil erosion, and sedimentation are serious threats to the ecosystems function and economic service provision capacity of the Basin. Incidence of flash floods is increasing, and sediment loads are impacting fisheries, irrigation, and hydro-power generation as well as water quality.

The Bank is preparing a comprehensive watershed management program for the Shire Basin, with an Adaptable Program Loan (APL) expected to total US$150 million over two six-year periods. The objective is to generate social, environmental and economic benefits from improved management of the Basin’s natural resources. The first phase will support capacity building for basin management, infrastructure for flood mitigation and socio-economic development, and livelihoods-based watershed management, including reforestation for erosion control, land conservation techniques, improved agronomic practices, and community plantations to reduce the gap between biomass production and consumption. Soil conservation and reforestation measures in the upper watersheds also deliver key ecosystem services by helping to prevent sedimentation and economic losses in the lower watershed. The program is supported by partnerships including IFAD, DIFID, Norway, JICA and others who will provide associated financing and technical assistance.

Several OECD countries and some Latin American countries have adopted Payments for Environmental Services (PES) approaches where users of ecosystem functions lower in the watershed (urban water, hydro-electric energy) pay land-holders in the upper watershed to conserve ecosystem functions through maintaining forest cover. Programs in Costa Rica are among the best known. While there would, in principle, be potential for such schemes, such schemes require quite well developed institutions and transfer payment arrangements, and may be challenging to implement in the short run for African countries.
and coastal zones need to be sustainably managed to maintain resource resilience. Common themes for coastal and marine fisheries include simple, consistent regulatory frameworks, assigning access rights to fisheries, basic management tools including co-management by fishermen’s associations, closed seasons, agreement on fishing gear, protected areas for juveniles, surveillance and transparency initiatives, stock assessment, improved landing facilities, and fish product information systems. The West Africa Regional Fisheries Program supports national efforts within a common regional framework. A similar program is under development for the South-East African countries and for Gabon. Box 5.3 provides an example of a national program developed within a regional framework.

In a number of countries approaches that combine improved coastal zone management and marine protected areas with fisheries resource management are important. These include the West African coastal countries Gabon, Angola, Mozambique, Comoros, Kenya, Tanzania and Madagascar. (South Africa, Namibia and Seychelles may provide useful models). Inland fisheries and aquaculture are important especially along the major rivers and lakes and may require regional cooperation.

Improved management of forests, woodlands, and trees should focus on their role as a provider of goods for employment and livelihoods, as well as on their ecosystem services function.

*Actions will focus on the role of forests, woodlands and trees in domestic and regional economies, first as a provider of “provisioning” services for local energy, industry, and food, fodder and other non-timber forest products, and, second, as a provider of “ecosystem services,” protecting watershed, controlling erosion and enhancing fertility, regulating the climate, and protecting biodiversity. Export revenue and global public goods are subsets of these broader roles.*

*There is potential for scaling up community forest management, private sector development, and value-chain enhancement for timber and charcoal, and biomass energy programs industries, as well as non-timber forests products, and eco-tourism development.*

*The plan would expand investments in watershed and landscape management, enhancing protection of productive assets such as soil fertility and trees in agricultural landscapes,*

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**Box 5.3: Improving local value added from sustainable fisheries and aquaculture in Ghana**

In Ghana fish provide 65 percent of protein for the population, are the source of direct or indirect employment for about 2 million people, and contribute 4–5 percent of GDP. Overfishing and lack of investment in value added has reduced the value of catch by canoe by 40 percent over the last 10 years, and overall marine fisheries catch has declined by 20 percent.

Government’s program, supported by the Bank with a US$50 million IDA credit, is to improve fisheries management, protect the environment, promote value-added and encourage sustainable aquaculture. The program is being supported through World Bank operation which assists with (i) improvement of the policy and regulatory framework and sector planning for both fisheries and aquaculture, fisheries information, and monitoring systems; (ii) introduction of fishing rights systems among fisheries’ communities, licensing systems, adjustment of fishing effort, vessel decommissioning and alternative livelihoods, and marine resources management, along with monitoring, control and surveillance systems; (iii) support to value chain development, landing site improvement, trade infrastructure and information systems, fish product certification, and support to marine and inland aquaculture including development of a regulatory framework for fish farm spacing, and improving policies for genetic material.
and regulating water-flows. Forest restoration and conservation will mitigate the impacts of climate change through sequestering carbon (see also Section 5.4), but, more importantly for most African countries, it will also enhance adaptation by increasing the resilience of lands, water resources, and watersheds to the impacts of floods, droughts and heat stress. Enhanced support for biodiversity conservation both inside and outside protected areas will help sustain areas of high conservation value.

**Action plan implementation needs to build local institutions, information systems and capacity for transparent governance at decentralized as well as central level, taking advantage of the new opportunities provided by information and communications technology.**

**Priorities vary amongst sub-regions.** In the Sahel region, priorities are community-based agro-forestry and community woodland management, and private enterprise and value chain development. For humid West Africa, priorities include greater efficiency and formalization of the local timber industry, governance, revenue, and tree tenure reforms, agro-forestry and incentives for plantations, as well as coastal mangrove and watershed protection. The priorities of Central Africa include wood energy management around the major cities, value-chain enhancement for domestic timber processing and forest eco-tourism, and decentralized community forest management, as well as support to transparent management of concession forests for social and economic benefits. Forest biodiversity needs special protection, as well as careful management of the impacts of infrastructure and mining developments on forests and local people. The sub-region also stands to benefit very substantially from Reduced Emissions from Deforestation and Forest Degradation (REDD) (see Section 5.3 on climate change). For Eastern and Southern Africa, the priorities include agro-forestry and watershed management, biomass energy especially around major cities, community forests and plantations, eco-tourism development, nature conservation and coastal mangrove protection, and forest management as part of investments infrastructure and mining.

Biodiversity conservation needs to focus on benefits for local people, integrated land use planning, and adequate financing.

**Financing the management of protected areas is a major challenge because of the global public goods that they provide,** which are poorly reflected in market prices. In most OECD countries the bulk of the direct costs are met through general budgets, in recognition of the broader economic and social benefits that these landscapes bring. In most African countries, the appropriate strategy is to combine support for protected area management with broader sustainable land use planning and support to productivity enhancement and local livelihoods of people living near parks. Mozambique and Zambia provide models for working with the private sector to promote eco-tourism. Foundations can contribute.

Financing biodiversity offsets in the context of infrastructure development has been tried (e.g., in Lom Pangar in Cameroon). Madagascar has established a conservation trust fund, and there is scope for “payment for environmental services” schemes in some countries (including through REDD). Over the medium term, however, many of Africa’s protected areas will need external funding to survive until countries have the fiscal space to fund them directly in recognition of the broader role they play in job and revenue creation.

Much biodiversity is found outside protected areas: by restoring natural vegetation, broad landscape restoration measures bring multiple wins in that they also support creation of an environment that harbors wildlife and ecosystem functions.
5.2 Supporting Livable Urban Areas

Improving environmental quality in cities can provide a basis for employment, growth and resilience in urban areas.

Priorities include improved traffic management and access to public transport; measures to improve air quality; improvements in water supply, sanitation, drainage, and solid waste management; land use planning to protect water-ways and flood plains and provide for orderly infrastructure development and adequate open space for recreation; and secure land tenure.

Many urban programs, by laying the foundation for improved municipal management and security of tenure, also lay the basis for more environmentally sound, livable cities. The Kenya Informal Settlements Improvement Project, for example, will improve living conditions of Kenyans in informal urban settlements, strengthen the security of tenure and improve physical infrastructure in informal settlements in the large municipalities. Others, such as the Cotonou Urban Environment Project directly address risk and resilience issues by improving drainage, flood control, solid waste management, and land use planning (see Box 5.5). Urban environment programs emphasizing drainage, sanitation, and solid waste management are under implementation or preparation in a number of countries (Accra in Ghana, and Zanzibar in Tanzania to name two). Programs are also accompanied by governance reforms in areas such as municipal land-use planning, management, and tenure reforms.
Urban transport and traffic management need approaches adapted to particular cities’ needs with special focus on public transport access, affordability, and pedestrian safety (35 percent of journeys in African cities are made on foot, more than any other mode). Lagos has taken an innovative approach to public transport development, which may provide a model for other countries (see Box 5.6). In some West African cities, the widespread use of two-stroke engines for motorbike taxis poses particular pollution problems.

Priorities for improving the urban environment include rapidly growing cities such as Accra, Cotonou, Dakar, Dar es Salaam, Douala, Kampala, Kinshasa, Lagos, Nairobi, Bamako and Ouagadougou. However, increasing attention also needs to be given to secondary cities and towns.

5.3 Making Development Climate Resilient while Promoting Low Carbon Growth

Resilience and adaptation are the priorities, while there are also opportunities for low carbon growth and for taking advantage of synergies between adaptation and mitigation.
This action plan calls for a focus on making adaptation and climate risk management a core part of the development agenda, with a particular focus on natural resource management, climate-smart agriculture, coastal land-use management, infrastructure planning, improved weather and climate services, and integration of the disaster risk and adaptation agendas. The Strategic Program for Climate Resilience for Mozambique provides an example; the US$250 million program supports improved design and maintenance for roads in the Zambezi valley, drainage and coastal protection in the city of Beira, improved hydro-meteorological services in the Zambezi and Limpopo valleys, and climate resilient agriculture and irrigation in Gaza province, while leveraging private sector investment in forests and watershed management and improving provincial spatial planning. Development policy lending will support further mainstreaming into development planning processes. In Niger, on the other hand, the focus is on sustainable land and water management, weather services and social protection (see Box 5.7); Ethiopia has a similar approach. In Senegal, with limited funding available, the focus is on flood early warning systems and planning for coastal protection. Some countries, such as Madagascar, have successfully adopted relatively low cost strategies to plan for and reduce the impact of natural disasters in infrastructure and housing construction. Given the importance of agriculture to economies and livelihoods, a particular priority is to support “climate smart agriculture” to meet the “triple win” of greater productivity and food security, enhance climate resilience, and low carbon emissions growth.

There are low carbon growth opportunities in energy and transport but also in improved land and forest management, where there are strong synergies with adaptation. (As mentioned in Section 3, land use change accounts for two-thirds of GHG emissions in Africa). Both hydroelectric and fuel-wood or other biomass energy, if sustainably managed, present low carbon options for energy development. Ethiopia, Mali, and Kenya are participating in the strategic renewable energy program, tapping sources such as geothermal energy, small-scale hydro and solar energy; several countries participate in the reduced gas flaring initiative and through promoting clean energy sources (e.g., hydro-power) and energy efficiency, adopting cost effective clean coal energy generation and reduced gas flaring. South Africa, where coal-fired energy is the main emissions source, has developed a low carbon growth strategy focusing on energy efficiency, transport, and development of renewable energy resources as a long term approach to reducing emissions.

Box 5.7: Niger: Food Security and Climate Resilience: converging challenges in one of the world’s most vulnerable countries

Niger has highly variable rainfall; 84 percent of the population dependent on land based activities including cropped agriculture and livestock rearing for survival. Agriculture accounts for 39 percent of GDP. However, 50 percent of its population suffers periodically from food insecurity. Temperatures are projected to increase and the incidence of extreme weather events to become more frequent over the next decades. The 2008–2012 Poverty and Economic Growth strategy recognizes the impact of climate on development and human welfare.

Niger’s Strategic Program for Climate Resilience (SPCR), a US$110 million program, has three major elements: improved climate and weather services, agricultural water management in irrigated areas, and community-driven approaches to sustainable land and water management, together with enhanced social protection in rainfed areas. The program builds on Niger’s strong record in decentralized community development, as well as its Poverty Reduction and Economic growth program, which emphasizes sustainable rural development. It builds also on the farmer-managed forest regeneration program, which was first started following the droughts of the 1980s. The program gives simple title of farmers to land and the trees that grow on it, and has facilitated a widespread recovery of vegetation in Niger, enhancing soil fertility and yields, providing fodder and shade for livestock, controlling erosion, and making landscapes more resilient to extremes in heat and rainfall.
dependence on coal. Even in countries with complex institutional challenges like Nigeria, there is scope for “short-term wins” (see Box 5.8).

For most countries however, the main potential lies in investing in agro-forestry, sustainable land management and reduced emissions from land use change, deforestation and forest degradation. The Kenya agricultural soil carbon project provides an example of an approach combining adaptation and mitigation; the focus of a program covering 60,000 ha in Western Kenya is on improving productivity through soil fertility and landscape restoration measures, but the program also results in carbon sequestration, which is benefiting from access to carbon finance through the bio-carbon fund. Seventeen countries are participating in the Forest Carbon Partnership Facility (FPCF), which is helping countries “get ready for REDD.” In addition to DRC (see section 2), Burkina and Ghana are participating in the Forest Investment Program which is piloting investments in REDD.

Knowledge and capacity development are key elements in climate and development strategies. Africans’ resilience can be enhanced by investing in improved weather and climate information services, disaster preparedness, including drought and flood forecasting, and land use planning. New technologies have a role to play. Solutions do not have to be high cost but need to be adapted to citizens’ needs and developed in consultation with them. Solutions do not always have to be high cost (see Box 5.9). As regards mitigation, also monitoring, verification and reporting systems are being developed; these are key requirements for countries to benefit from future climate mitigation finance. There is scope to scale up financing opportunities, through public and private sector investment, development finance and future climate finance.

“Climate-smart” development is a priority for all African countries although the focus will vary between countries. There are longer term plans to raise large-scale financing to

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**Box 5.8: Nigeria – Toward Low Carbon Growth: A Long Term Agenda**

Nigeria, with 150 million people, is one of the least energy-efficient countries in the world, in part because poor access and poor reliability of electricity delivered through the national grid has required industries and households to invest heavily in expensive, high GHG-emitting diesel powered generators. Eighty million people lack access to electricity. Furthermore, widespread gas flaring associated with oil production is a major source of GHG emissions and reduces availability of gas-powered energy. Land degradation is a further contributor to GHG.

It is estimated that 31 percent of Nigeria’s GHG emissions are from gas flaring and other “fugitive” sources, 39 percent is from agriculture (excluding land use change), six percent each are from waste, electricity and heat, and nine percent from the very rapidly growing transport sector, with the remainder from other sources.

A major disincentive for investment in gas infrastructure and the power generation associated with it has been the price of gas, fixed very low by the government. This is being raised, from US$0.2/million metric British thermal units (MMBTU) in 2009 to US$2/mmbtu by the end of 2013. Given the extensive investments that will be necessary in development of gas infrastructure and improved electricity generation and transmission, Nigeria’s Clean Technology Fund (CTF) focuses on “short term wins” in bus-based rapid transit and mass transit in the cities of Lagos, Abuja, and Kano, and in assistance to financial intermediators to overcome the market, technical, and time barriers constraining investments in clean energy and energy efficiency.

Overall program costs are estimated at US$1.3 billion, with US$200 million financed from the CTF and the remainder from multi-lateral development Bank, IFC, government, and private sector sources.
address the climate agenda through the Green Climate Fund, which is intended eventually to replace and scale up the climate funding mechanisms that are presently available. However, the Fund is likely to become operational only towards the end of the decade, and its scale is dependent on agreements reached in future climate negotiations. Whatever the funding source, climate-smart development is essential to the core growth and poverty reduction agenda in Africa.

5.4 Managing Development Of Oil, Gas and Mining Sustainability

Environmental and social sustainability need to be pursued as an integral part of the improved mining, oil, and gas resource development and governance agenda, if the “green growth” objective articulated in the strategy is to be realized.

Capacity and governance are the foundation, with EITI ++ at the core. For precious minerals, the needs and priorities of artisanal miners need to be addressed, including their safety and security, but also the environmental impacts of their activities. Small scale and artisanal mining are key sources of jobs in resource-rich countries, and their activities also have indirect employment impacts in terms of trade and small industry.

Approaches will vary by country; in DRC, the priority is improved mining sector management broadly, including environmental impacts and the artisanal miners’ concerns (see Box 5.10). Regional approaches may work well in some circumstances (e.g., the Manu basin in West Africa). The Zambia mining/environment project focuses on environmental remediation, while other strategies support development of development corridors connected with mining and energy development. Sound environmental policies and institutions management are core elements in clarifying the regulatory operating environment and attracting responsible investment into mining, oil, and gas development. In Nigeria, the Sustainable Management of Mineral Resources Project is supporting environment capacity building for the Nigerian mining sector, including training of an environmental management unit in the Mines Department. It is also supporting review and improvements in the regulatory and institutional framework to resolve overlapping responsibilities and address conflicts.

Box 5.9: Cyclone-Resistant Building Codes in Madagascar

Madagascar, is affected by three to four major cyclones per year, and is thereby the African country most vulnerable to cyclones. Physical damage and related productivity losses reduce average GDP by about four percent of GDP. To minimize cyclone-related damage and loss of life, the government has introduced a cyclone resistant building code, developed by an inter-agency team. In the areas most vulnerable to cyclones, the code requires buildings to be constructed to withstand wind speeds of up to 266 km/hour.

To ensure implementation, the new code provides for civil penalties for construction firms. The code has led to positive results. Only one of the 1000 buildings supported through the Community Development Program, a US$100 million program which closed in 2008 and which required that public buildings meet the new standards, had been damaged by cyclones as of late 2010.
5.5 Environmentally Sustainable Infrastructure and Energy Development

Mainstreaming environmental sustainability into infrastructure development is core to growth and competitiveness in Africa.

Good transport planning and management brings both environmental growth and efficiency gains.

In the transport sector the good progress in environmental mainstreaming needs to be maintained and scaled up. A major road rehabilitation and improvement program in Ethiopia is including environmental impact studies, and incorporating environmental clauses and bioengineering measures in contracts for the roads to be upgraded. These include requirements to address soil erosion, pollution, quarry and borrow-pit design, camps and access roads, avoiding extraction of gravel and sand from riverbeds and protection of rare flora and fauna (see Box 5.11).

Major road upgrading programs can also provide an opportunity for broader environmental and social improvements in urban areas. The high returns of “transformational” improvements in connectivity can be further enhanced by investments in improving urban “livability” and social infrastructure (See Box 5.12).
The region is committed to improving access to clean, affordable energy.

Improving affordable energy access, developing low carbon energy for green growth, and making biomass energy sustainable are the core objectives of the energy strategy for Africa. The region also aims to have GHG-emitting projects as less than 19 percent of the portfolio by 2015, and to have a greater emphasis than in the past on sustainable biomass energy and improved cookstoves. The region is using a range of financing sources to develop innovative approaches to renewable or off-grid energy (see Section 5.3). Energy efficiency and reducing transmission losses have a key role to play; under pricing also accounts for major inefficiencies. It has been estimated that 1.3 percent of GDP has been saved annually in Kenya from reforms to increase prices, improve revenue collection and reduce distribution losses.

Box 5.11: Improving Connectivity in Ethiopia: incorporating environmental sustainability into road design

Ethiopia has a population of 70 million people; over 80 percent live in widely dispersed rural areas. Improving road access is key to the economic and agricultural productivity agenda and to broader growth and poverty reduction.

The Ethiopian government has embarked on a major road rehabilitation and improvement program, with the objective of strengthening the Ethiopian road agency, increasing the capacity of local contractors and generating local employment. The World Bank is helping to fund a US$450 million program with these objectives. While detailed environmental impact studies have been undertaken for the roads to be upgraded first, others will be undertaken during implementation.

Environmental clauses and bioengineering measures are included in the contracts for the roads to be upgraded and realigned. These include requirements to mitigate potential adverse impacts such as soil erosion, water, soil and air pollution, design of quarries, borrow-pits, camps and access roads. In addition, appropriate measures will be taken to protect rare flora and fauna, and to avoid extracting gravel and sand from riverbeds. (One of the roads, the Ankober-Awash-Arba road, passes through the habitat of two rare birds, the Ankober Serin and the Yellow Throated Since). Precautionary measures will also be included into contract clauses on how to deal with chance finds (cultural heritage) and threatened wildlife.

Box 5.12: The Dakar-Diamnado Toll Road: Improving connectivity and the Urban Environment in Senegal

The road linking Dakar (whose growth is highly constrained by its location on a small peninsula) with the neighboring growth pole of Diamnado 30 kilometers away is a cornerstone in the transformation of the Dakar metropolitan area into a dynamic center for growth. Total costs of the road, constructed as a toll road with a public-private-sector partnership, are over US$600 million. Senegal’s population is already 45 percent urban and rural-urban migration continues as citizens are attracted by the job opportunities and greater access to services in the larger towns.

IDA is contributing US$105 million to the program with two objectives: (i) improve mobility between Dakar and Diamnado; and (ii) provide communities affected by the construction of the highway access to basic social and economic services.

The road passes through large low-income slum settlements built on flood-prone land whose inhabitants suffer from poor drainage, flooding, and poor road and social service access. About 30,000 people will be relocated, and adequate infrastructure and services provided. People will also be provided with incentives to gain secure land tenure and title. A dumpsite close to the resettlement site will be closed and a sanitary landfill constructed elsewhere. The road will pass through the Mbao Forest Reserve, the last protected forest in the Dakar area. The forest will be rehabilitated through support for implementation of a detailed management plan. The forest plays a role in the long-term development of the city, as needed public open space.
The region is incorporating strategic environmental assessment and environmental health considerations into new power generation. Support for new coal powered generation in Botswana and South Africa provided an opportunity for the countries to cooperate around a trans-frontier strategic environmental assessment of the impact of the new developments on the air-shed, taking advantage of the strong environmental oversight capacity in both countries. In Nigeria, the Electricity and Gas Infrastructure project is helping the Federal Ministry of Environment to strengthen Environmental Impact Assessment (EIA) monitoring and enforcement, and providing equipment and training to monitor environmental quality.

The region is committed to incorporating social and environmental mitigation measures into project design. Long delays between initial planning and implementation, and changing relationships between financing partners can make this challenging. In Cameroon, the Lom Pangar hydro-electric project includes measures for creation of biodiversity offsets and forest protection, and a companion project is strengthening broader environmental capacity and transparency in the energy sector. But in the Bumbuma hydro-electric power project in Sierra Leone Bank engagement, in part due to the long disruptions related to civil unrest, efforts have been limited to supporting environmental and social mitigation actions. These have been challenging to implement without at the same time financing the energy investment. Though risky and difficult, this is a good ‘second-best’ solution.

Box 5.13: Sustainable Development of Cameroon’s Energy Potential

Cameroon is rich in hydroelectric power potential, and also has important oil, gas, and mineral reserves. The southern part of the country is located, furthermore, in the Congo Rain forest, an important sequesterer of carbon and rich in biodiversity. Forty-seven percent of the population of 20 million presently has access to electricity.

The Government of Cameroon is developing its energy potential. The objectives of the Lom Pangar hydro-electric project, an upstream regulating dam and reservoir, are to unlock growth and poverty reduction opportunities in the Sangamor river and its region, and more specifically to (i) improve the availability, reliability, and affordability of electricity supply for households and businesses; and (ii) address effectively the environmental, social, and distributional risks of the project.

Lom Pangar is on the river Lom in eastern Cameroon, and the project would consist of a regulating dam, a 30-megawatt hydroelectric generating plant, and a 120 km 90 kvolt transmission line, as well as implementation of an environmental and social management plan. Total project costs are estimated at US$560 million, of which US$100 million would be for implementation of the environmental and social mitigation program.

The project will flood 537 km² of land including 300m² of natural forest, which will need to be removed in order to reduce methane emissions after flooding. It will involve relocation of part of the Chad-Cameroon pipeline, and creation of the Deng Deng national park, a chimpanzee and gorilla sanctuary, as an environmental offset for the flooded areas. They will change the flood pulse and hence fisheries habitats downstream of the dam, a monitoring program will be put in place, and there will be opportunities for aquaculture in the reservoir. The project also includes provisions to safeguard the interests and livelihoods of local communities.

Recognizing the key role of environmental and social governance in sustainable development, the Government of Cameroon has had a clearly defined institutional and regulatory framework for the management of Environmental Assessments (EAs) since 2005. All large projects must be reviewed by Inter-Ministerial Committee on the Environment, subjected to public hearings, and receive a certificate of compliance issued by the Minister of Environment. A parallel operation, the Environmental and Social Capacity Building project, is strengthening capacity in this regard. Despite recognition of the importance of these issues, these projects have been challenging.
The region is committed to increasing its support to biomass energy development. Approaches that address the incentive framework for sustainable woodland management, production, transformation efficiency, transport, use in cooking, and oversight in an integrated way have shown highly positive results. The Senegal Wood Energy and participatory management program, now in its second phase, supports improved wood energy production, transport trade, governance, and utilization along the value chain (see Box 5.14).

Improving access to water, sanitation, and solid waste disposal are key to environmental health outcomes

The region is working to improve access to water, sanitation and solid waste management through a range of programs. In Cameroon, for example, access to improved sanitation is 57 percent in urban areas and only 35 percent in rural areas. An ongoing program there focuses on hygiene education to promote demand for sanitation, together with

Box 5.14: Senegal: Investing in Wood Energy Management through community based approaches

Over 40 percent of Senegal’s population lives in urban areas and its capital city, Dakar, has nearly three million people. Charcoal and fuel wood are the principle energy source for cooking, used by 84 percent of households.

Senegal’s forests are state-owned. In the past, the Directorate of Water and Forests, Hunting and Land Conservation allocated commercial exploitation rights to forests nation-wide. Rights were assigned mainly to urban-based traders based on centralized ‘charcoal quota systems.” Income gained by local producers was estimated at only seven percent of gross market revenues. Senegal also had a subsidy program to encourage use of LPG (liquefied natural gas).

Senegal’s 1996 Decentralization Law stipulated transfer of environment and natural resource management responsibilities to local governments, and this led to a revision of Senegal’s Forest Policy in 2005, with the goal of reinforcing resource management decentralization, community forest management, and decentralization.

Bank support to wood energy management has been ongoing since 2000. The First Sustainable and Participatory Energy Management project (PROGEDE) had the objectives of meeting urban household fuel wood demand while avoiding forest ecosystem loss; and generating employment and income earning opportunities among participating communities. PROGEDE provided US$12 million to support community based forest management systems over 380,000 ha, supporting production of over 67,000 tons of charcoal per year, establishment of a protection zone around a national park, inter-fuel substitution and improved stoves, and institutional strengthening, including promotion of the participation of civil society.

The program was successful. Revenue creation for local communities was however limited by a centralized system of assignment of charcoal quota systems, which benefited largely urban traders. Income gained by local producers was estimated at only seven percent of gross market revenues. In 2009 Senegal was obliged to phase out the LPG subsidy for budget reasons.

PROGEDE 2 (US$15 m IDA credit plus support from other partners) has been designed to extend the successes of PROGEDE 1, but also builds on the recent Energy Sector Development Policy, which provides the basis for reforms in the charcoal quota system and the charcoal value chain. The project aims to increase ten-fold the quantity of wood fuel that is sustainably produced, increase alternative household fuels, reduce deforestation, reduce CO2 emissions and increase the income of participating communities. It supports (i) transparency and diversification in the charcoal value chain; (ii) community wood fuel and forest management; and (iii) modernization of household energy including improved stoves and piloting new energy sources.

Source: PROGEDE project appraisal report 2010
targeted subsidies for latrine construction, decentralization and municipal reforms, promotion of competition, and a gradual move towards cost recovery, and improvements in technical design and sludge management. There also have been major programs, which address both water and sanitation in several major urban areas. Among the most successful has been a public-private partnership approach in Senegal, where access to improved sanitation in urban areas is now 79 percent, well above the African average. In Tanzania, the World Bank has taken a comprehensive approach with a US$200 million program aimed at strengthening institutional capacity and policy re-alignment; and supporting local governments, urban centers and Dar es Salaam to improve water and sanitation services.

But environmental and social issues remain even in operations designed to address these very challenges. In Accra, Ghana the approach under the Second Urban Environment Sanitation Project (approved in 2004) was to combine storm drainage, sanitation, community infrastructure, institutional strengthening, and construction of a properly engineered landfill to address the city’s growing solid waste problem. There were however implementation challenges with the landfill site, including opposition by some local people living in the vicinity of the site, engineering issues, and, later, construction of an electricity transmission line over the site and encroachment of settlement onto the site. The proposed landfill was the subject of an Inspection Panel investigation, and eventually the government decided not to proceed with its construction but to focus on short-term solutions to the solid waste problem. There has been some success in supporting composting, as in Uganda in small towns, through a combination of IDA and carbon finance.

Because of the link between poor solid waste management, inadequate drainage and flood risk solutions are beginning to be found in some of the most vulnerable coastal cities (such as Cotonou and Dakar). Overall, solid waste management has not yet received sufficient priority in the Africa region.

5.6 Improving the Enabling Environment for Responsible Investment Through Transparent Environmental Regulations and Institutions

Building capacity and transparent environmental governance is a core part of the doing business and investment agenda

Key elements include environmental capacity and oversight functions both in core environmental and in key sectoral agencies. However, regulations need to be adapted to local capacity and resources and to have strong local ownership; legislation that is transposed from OECD countries is unlikely to be enforceable.

Where countries have relatively well developed institutions, an effective approach is to support mainstreaming environmental sustainability into key government decision-making and financial processes. The objective of the Natural Resources and Environmental Governance development policy lending series in Ghana, for example, was to support reforms aimed at (i) ensuring predictable financing, sustainable management, and law enforcement for forests and wildlife; (ii) improving mining sector revenue collection, management, and transparency; (iii) addressing social issues in forest and mining communities;
(iv) mainstreaming environment into economic growth; and (v) developing a climate change strategy. Regarding environmental management, the operation specifically supported clarification of responsibilities between agencies, strengthened environmental monitoring systems, decentralized environmental management agencies, improved and increased the timeliness of environmental assessment procedures, and developed a legal instrument for strategic environmental assessment for key sectors including the oil and gas industry. The operation is supported by a range of development partners. In Nigeria, the approach has been to mainstream environmental management into a range of sectoral operations (see Box 5.15).

**A key element would also involve strategic environmental assessment of different sector development options.** This is an area that is still poorly integrated into legislation and planning in many African countries—again, though, local ownership is key. Where such studies are supported by external agencies and do not have local ownership they are unlikely to be effective. Strategic Environmental Assessments (SEA) into the impacts of coal-fired power plants on the Southern Botswana–South Africa “airshed” have helped identify cumulative impacts, and a SEA on the regional impacts of mining developments in West Africa was also useful.

A complementary approach is to support environmental oversight in key economic and infrastructure sectors and through project design.

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**Box 5.15: Mainstreaming Improved Environmental Management in Sectoral Programs in Nigeria**

The Nigeria Electricity and Gas Infrastructure Project (NEGIP) is assisting the Federal Ministry of Environment to strengthen its capacity to enforce Environmental Impact Assessment (EIA) requirements and monitor EIA and Energy Sector Management Assistance Program (ESMAP) implementation in development of gas wells and gas gathering by international oil companies. NEGIP is training EIA Department staff in real time monitoring, providing equipment (including hand held devices) for environmental quality (soil, air, and water) monitoring, utility vehicles, and digital cataloging and database of EIA reports and audits. During the preparation of the NEGIP project, the Bank conducted a preliminary review of the legal, regulatory and institutional framework for environmental assessment and management in the gas sector.

The Nigeria Public/Private Partnership Adaptable Program Loan (APL) is helping the EIA Department to oversee Public-Private Partnership (PPP) safeguards assessment work and monitor compliance. The Technical Assistance (TA) will support the unit with structuring an environmental management system and audit system, risk assessment policy and ecotoxicology policy. The project will support the EIA department with training on environmental and social monitoring and evaluation as they relate to public infrastructure, large infrastructure projects. A database of ESIA and Audits will be created to tie into the database the NEGIP project is supporting to the EIA Department.

The Mineral resources project supported development of new mining act regulations in Nigeria. The project also financed the environmental management capacity-building program for the Nigerian mining sector, including training of an environmental management unit at the Mines Department. The project also financed the preparation of regulatory framework and institutional analysis of entities involved in environmental management in the mining sector. The framework is aimed at eliminating conflicts, confusion and overlap among the different agency involved in environmental governance in the mining sector.

The Fadama agricultural productivity programs have supported sustainable land management initiatives, including wetland and watershed management, and the Local Empowerment and Environmental Management project supported protected area management and sustainable livelihood options.
An Action Plan for Improved Natural Resource and Environment Management

For the transport sector, for example, this includes incorporating environmental assessment, management and mitigation criteria into designs, bidding documents and procurement review. It also includes ensuring that the country environmental protection agencies have capacity to perform adequate independent oversight functions, and that sector agencies have adequate capacity, and in some cases integrating capacity building into project design (as in the Ethiopia example mentioned in section 5.4). This approach works also where environmental agencies are weak as in DRC, for example, which does not yet have approved environmental impact legislation (see Box 5.16).

Support to environmentally responsible Small and Medium Enterprise (SME) development is a growing business area.

**Health and environmental safety is the first priority.** Safe handling of pesticides and chemicals for agricultural enterprises is handled, for example, in environmental mitigation plans developed under one of the environmental safeguard instruments; however, although a number of countries (Mali, South Africa) have developed legislation and supporting measures to address the issue, implementation remains a challenge. A number of operations address worker safety in the artisanal mining sector (for example the DRC Mining Sector Development program) in addition to broader transparency and governance initiatives; they also support formalization and registration of miners and trading counters, technology improvements, health and safety, gender and child labor issues and community relationships. Social and environmental issues are closely linked.

**Sub-sector specific approaches may be required.** In Cameroon, for example, the domestic timber industry, most of it informal and using inefficient processes, is a major employer (see Box 5.17).

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**Box 5.16: Environmental oversight in infrastructure project design**

The objective of the Proroute project in DRC is to reestablish lasting access between provincial capitals and districts in three provinces in a way that is sustainable for people and the natural environment in the project’s areas. Specifically the project aims to reopen and maintain about 1,800 kilometers of the high-priority road network within Province Orientale and between South Kivu and Katanga; strengthen road-agencies capacities and maintain them; and help combine post-conflict infrastructure recovery with the protection of environment and indigenous communities. Twenty percent of project funds are dedicated to an environmental and social program that supports conservation and local livelihoods. Key outcome indicators, in addition to those regarding road rehabilitation and traffic, include the number of local environmental management plans developed by local communities, the percentage change in illegally harvested timber and bush-meat at marketing points, and health and school enrollment indicators.

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**Box 5.17: The Competitive Value Chains project**

The Competitive Value Chains project (approved in June 2010 with a credit of US$30 million) aims to stimulate sustainable growth and employment by improving productivity and value-added in two sub-sectors, enhancing the wood and tourism value chains, and providing specialized infrastructure investments, vocational training, policy reforms, and targeted innovation grants. In particular, the program would support reforms to promote the processing of certified dry wood, technical assistance and training in enhanced timber processing techniques focusing on specialized artisans. It would support studies for creating a wood cluster for Yaoundé as a center for legally supplied timber processing. It would also support improvements in the business environment, including consolidation of processes for establishing new businesses.
While international transparency processes such as FLEGT and EITI ++ are useful for the export sector, it is important that they do not have the unintended consequence of “excluding” the informal and domestic sectors from simpler legalization and sustainability opportunities. There need to be simple approaches which “crowd in” small-scale producers.

Poor access to long term financing remains a constraint for investments, which are productive in the long term, but likely to have longer start-up costs to meet environmental sustainability objectives. Simple land property rights certification schemes can also improve the enabling environment for longer-term approaches. The focus is on SMEs since it is here that the greatest barriers exist.

Larger enterprises are better able to implement the Equator Principles, and a number are now making good progress, often to meet consumer preferences in OECD countries, in articulating sustainability objectives. A transparent, clear regulatory environment for environmental management and oversight reduces long-term reputational and other risks for investors and is more likely to attract good quality, long-term investment.

Priority countries regarding environmental governance strengthening would include countries embarking on major investment programs following periods of conflict such as Angola, Mozambique, D.R.C, Burundi, Central African Republic, Côte D’Ivoire, Chad, Guinea, and Liberia but also Nigeria, Uganda, Sudan, and South Sudan. Priorities regarding SMEs include Nigeria, Ghana, Cameroon, Uganda, Kenya and Tanzania.

Annex I provides a matrix summarizing country priorities by the six business areas.

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17 Principles of responsible, sustainable private sector investment articulated by IFC and adopted by a large number of important companies.
6.1 Key Messages

Key messages are summarized in the following:

- **Partnerships need to be a core part of the implementation framework**, as regards both analytical underpinnings and investment. Partnerships need to occur within the Bank through cross-sectoral collaboration, and outside the Bank with financing partners, foundations, civil society organizations, and the private sector.

- **A range of tools, lending, and financing instruments is available** to prioritize and mainstream environmental sustainability, including analytical tools such as estimating the economic costs of natural resource and environmental degradation, and lending tools such as development policy lending. But improving data and access to information is key.

- **Much of environmentally sustainable development involves mainstreaming environmental sustainability into broad sector development programs**, such as infrastructure, agriculture, mining and energy, urban development, and private sector development. This requires cross-sectoral collaboration outside the SDN network to PREM and FPD.

- **Safeguards have a role to play but the objective must be to move from safeguards to sustainability** through improved environmental governance, supported by “bottom up” transparency and accountability initiatives.

- **Sustainable ecosystems management** including land and water underlies development in other sectors and is key to their long term resilience: enabling policies for and investment in ecosystems resilience and restoration must be part of the Africa strategy.
6.2 Partnerships

Partnerships do now and will continue to play a key role moving forward; there is scope for developing further partnerships specifically regarding south-south co-operation, and on environmental governance and capacity building.

Development partners play a key role. The Netherlands and Denmark have been active in the environmental capacity building agenda. UK’s Department for International Development (DFID) has been especially supportive in some of the analytical work related to climate change impacts and mainstreaming. UNDP’s role in supporting development of National Adaptation Programs of Action (NAPAs) and Nationally Appropriate Mitigation Actions (NAMAs) has been key.

EITI ++ is a coalition that sets a global standard for transparency in governance of oil, gas, and mining. As a coalition of governments, investors, non-government organizations, and international organizations it is well placed to advance environmental and social sustainability objectives in extractive industries.

Norway is strongly engaged in REDD. The work on climate change has been supported by a number of Trust Funds including the Trust Fund for Environmentally and Socially Sustainable Development (TFESSD). Regarding climate change, trust-funded initiatives, in particular the Climate Investment Funds, but also pilot Carbon Finance instruments are instrumental in advancing innovative approaches to global challenges. The Global Environment Facility continues to support investments in biodiversity conservation, protection of international waters, reversal of land degradation, climate change mitigation, and management of persistent organic pollutants.

The Terrafricque Partnership has played a key role over the past five years in building an Africa-led knowledge base on sustainable land management and integration of landscape-based approaches into the Comprehensive African Agricultural Development Plan (CAADP) pillars.

As regards investing in biodiversity and protected area management, partnerships with conservation organizations have been critical. These include the WWF (World Wildlife Fund) and Conservation International, but also a broad range of international and local foundations.

Development partners such as ESMAP and the IFC initiative on Lighting Africa have supported work on renewable energy.

As cross-sectoral collaboration within the Bank, investment lending depends increasingly on partnerships outside the Bank. The African Development Bank is playing a key partnership role in implementation of the Climate Investment Funds, for example.

In the urban environment, transport and energy agendas, public private sector partnerships are important.

Regional integration is of growing importance in the growth and resilience agenda in Africa, and cooperative management of trans-boundary natural resources plays an important role in this.
The Global Program on Fisheries (PROFISH) partnership has been especially helpful in assessing the economic costs and lost revenues from poor fisheries governance and has helped articulate a reform agenda, which is now being taken up in investment operations.

The Program on Forests (PROFOR) has supported analytical work on forestry, and other initiatives including FLEGT have also been helpful.

South-South partnerships are beginning on forests but there is much more to be done here especially on the environmental governance agenda.

Partnerships and trust fund support will be key in helping to fund background analytical work. The work is most useful, however, when strongly linked to country strategic development agendas, and providing the underpinnings for policy or investment lending agendas, PROFISH has been especially effective in this regard).

6.3 Knowledge and Analytical Underpinnings

Africa would benefit from undertaking the range of analytical work on the environment that has been completed in most other regions.

In the Middle East and North Africa (MNA) and the Latin America and Caribbean (LCR) Regions for example, a substantial body of work has concerned quantitative assessment of the economic costs of environmental degradation, to human health, to productivity and productive assets and to broader ecosystem functions. The analyses have informed policy makers on prioritization and helped build consensus around needed reforms and investments. Comprehensive work of this kind has only been undertaken in Ghana to date, though partial analyses have been undertaken in a number of countries (Nigeria, Mali, and Niger).

New tools are also being developed and scaled up. The Wealth Accounting and Valuation of Ecosystem Services (WAVES) initiative builds on earlier green accounting work and is attempting to incorporate natural capital and its depletion or restoration into national accounting systems. Two African countries, Botswana and Madagascar are currently participating.

The new work on green growth provides an analytical framework for incorporating environmental sustainability into macro-economic and sector policies and addressing trade-offs. Korea is a global leader in this area, but countries like Vietnam, China and now Ethiopia are beginning to adopt this approach.

There is a growing body of work on disaster risk vulnerabilities assessment. The Global Facility for Disaster Reduction and Recovery (GFDRR) has led the agenda here.

The tool of strategic environmental and social impacts assessment is increasingly being used to help in design of broad sector strategies, for development corridors or coastal zone management (e.g., in Mozambique), in mining (e.g., for the West Africa Manu

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Basin), energy (e.g., for coal power electricity generation in Botswana and South Africa), or in development of REDD strategies (e.g., the Congo Basin).

Overall in the Africa region environmental information and monitoring systems are weak and need to be strengthened.

### 6.4 Mainstreaming

Environment is increasingly mainstreamed into key sectoral development strategies. But more focus is needed on mainstreaming environment into the broader governance and public sector management programs that are often supported by development policy lending.

Figure 6.1 illustrates very much the cross-sectoral nature of the environment and natural resource investment lending in the African region. It illustrates a gradually increasing trend in investments through the decade, and also demonstrates the increasing commitments to the climate change agenda. The figure also illustrates the “perennial” difficulties with defining investment for “thematic” areas such as environment and natural resource management. “Land administration and management” includes work on cadastre and property rights, for example, while investments under forests and fisheries may be mapped to “agricultural” sector codes.

*A number of countries in other regions have supported natural resources and environment development policy operations.* These help make environmental capacity and governance building a core part of the development and public sector management agenda. Scale helps build local ownership and transformational impact. Countries that have supported environment or climate change development policy lending in recent years include

![Figure 6.1: Africa: Environment and Natural Resources Portfolio 2001–2012](image)

- Total lending over 12 years is $4.7b
- Only IBRD lending is
  - FY06 $14m for Biodiv and Institutions
  - FY10 $375m for Climate Change

Other environ mgmt  Water resource mgmt  Pollution mgmt  Land admin & mgmt  Environ policy/insts  Climate change  Biodiversity
Indonesia, Vietnam, Morocco, Turkey, Brazil, Peru, Mexico and Colombia. Some countries are now initiating broad-based “green growth” Development Policy Loans (DPLs). In Brazil, for example, where the Brazilian authorities recognize that sustainable environmental management and poverty reduction are key to their competitiveness and growth agenda, the objective of a recent DPL was to integrate principles of sustainability into natural resource management including water, land and forests, as well as to promote renewable energy and address climate change concerns (see Box 6.1).

The operation builds on substantial experience with investment operations as well as analytical work. There is potential for scaling up use of this instrument in Africa, as well as to include elements for improved environmental governance into public sector management DPLs.

6.5 From Safeguards to Sustainability

The key message is that sustainable social and environmental opportunities exist in most Bank investments and policy dialogues, but that these can easily be missed if the only approach taken to environmental and social concerns is the regulatory one. While processes are important, there needs to be more focus on results, both during upstream design and during implementation.

Sustainable development is generally defined as development that meets the needs of the present generation without compromising the ability of future generations to meet their needs. Environmental sustainability, with its inter-temporal, spatial, and cross-sectoral dimensions, is a key pillar in this “triple bottom line” of economic, social and environmental sustainability.

There are policies in place with regard to the environmental assessment of operations proposed for Bank financing. The objective of these policies, with the underlying principle being results-oriented, is to help ensure that such operations are environmentally sound and sustainable, and thereby to improve decision-making. The policies were also designed to ensure that investments both planned for and mitigated any negative environmental impacts arising from the investments.

Over time the policies addressing social and environmental issues, have evolved into the “safeguard” policies, and have increasingly been regarded as regulatory instruments to manage and mitigate risks. The emphasis has been on upstream processes, rather than “substance” support during design and implementation to achieve positive environmental and social outcomes. This point is clearly articulated in a recent Independent Evaluation Group (IEG) review of experience with safeguard implementation. It argues for a greater focus on results.

The recent paper on Economic, Social and Environmental Sustainability in the African region articulates the same message. It argues that sustainable social and environmental

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19 Brundtland Commission, 1989
20 Operational policy on Environmental Assessment OP 4.01 Revised February 2011
21 IEG Study of Safeguard and Sustainability Policies September 2010.
22 “Economic, Social and Environmental Sustainability: capturing the triple bottom line” SDD Africa June 2010
opportunities exist in most Bank investments and policy dialogues, but that these can easily be missed if the only approach taken to environmental and social concerns is the regulatory one.
The unified Sustainable Development Department provides more opportunities for supporting projects sufficiently upstream in the design process, and through implementation, to help assure sustainable outcomes.

Governance and capacity building are also key to the sustainability agenda; capacity building (including improved monitoring, accountability and reporting tools) needs to be built into program design. The results agenda also provides opportunities to include specific environmental sustainability results in program outcomes.

Environmental governance indicators exist but greater and more systematic use should be made of existing instruments and they need to receive greater priority in development strategies.

The Country Performance and Institutional Assessment (CPIA) tool provides a useful common framework for assessing progress with environmental and natural resource management (indicator 16). Its results need to be highlighted more and mainstreamed into broader approaches for improving public sector management.

The Millennium Development Goals (MDGs) also include a monitoring framework for assessing progress on environmental performance (MDG 7). Over recent years MDG monitoring reports have generally included only one of the indicators on environment: progress with access to sanitation. There is scope to more systematically report on the others, which include progress in reducing the proportion of people living in slums, in reversing deforestation, and increasing the area under ecosystems protection.

Partnerships and bottom-up accountability are another key factor in governance monitoring. Environment and natural resource management programs lend themselves to participatory processes in program design and implementation, providing built-in opportunities for bottom-up accountability. There are also other processes such as EITI ++ and the FLEGT (referred to previously) which help promote transparency. Civil society organizations also have a strong role to play, together with strengthened capacity for environmental indicator monitoring and reporting.

Tools such as making use of satellite imagery, telecommunication, and simple air and water quality monitoring indicators can be further developed and are also part of capacity building as well as transparency agendas.

Environmental management and assessment processes also involve consultations with affected people, and this provides another opportunity for transparency.

### 6.6 Investing in Ecosystems Sustainability

While mainstreaming forms a key part of the agenda, ecosystems conservation and restoration underpins economic and social resilience in the Africa region, because of the essential services they provide to the economic well being of African citizens and their children.
Programs in fisheries resource management, watershed restoration, coastal zone management, sustainable forest management, biodiversity, and regional lakes management will need to remain part of the agenda. All of these require cross-sectoral integration, since many of the threats to the sustainability of these ecosystems lie largely outside the domain of the authorities responsible for natural resource management.

6.7 Results Monitoring

Monitoring results is challenging for a regional action plan in a country-driven operating environment. There are also problems of attribution; improvements or major deterioration in key environmental indicators may well be due to factors outside Bank programs and strategies.

The Millennium Development Goals include Goal 7 *Ensure Environmental Sustainability*. This goal includes four indicators: (i) integrating principles of sustainable development into country policies and programs and reversing the loss of environmental resources including deforestation; (ii) reducing biodiversity loss; (iii) halving the number of people without adequate access to water and sanitation by 2015; and (iv) improving the lives of at least 100 million slum dwellers. The World Bank work on monitoring progress with the MDGs has generally tracked regularly only the third of these four indicators. The Country Performance and Institutional Assessment framework also includes an indicator on environmental management, indicator 10, which provides a useful approach to monitoring progress with environmental governance as well as a number of other environmental performance indicators.
A framework for results monitoring is provided in Annex II which uses the MDG and CPIA frameworks but which also tracks progress with operationalizing the key strategic business lines of the Action Plan. It should be emphasized that because environment is crosscutting, achievement of these results depends on cross-sectoral commitment. For the most part, thematic outcome indicators have not been listed since these will be addressed through different sectoral programs.

6.8 Conclusion

This document has demonstrated the contribution that green, clean, resilient development plays in the Africa strategy for enhanced competitiveness and jobs, reduced vulnerability and increased resilience, and strengthened capacity and governance. The narrative of this environment strategy has argued that sustainable environmental management, including management of natural capital, contributes to broader economic growth and welfare gains.

This action plan has articulated six major development themes: i) managing renewable natural resources, including land, water, forests and fisheries, for inclusive growth and ecosystem sustainability; ii) improving the livability of the urban environment; iii) making development climate resilient and promoting low carbon growth; iv) ensuring sustainable development of oil, gas and minerals; v) enhancing access to energy and water and increasing connectivity while mitigating environmental risks; and vi) improving the enabling environment for responsible investment through transparent regulations and accountable, effective institutions.

This action plan has emphasized the importance of country driven agendas, partnerships, cross-sectoral collaboration and analytical work, including estimation of the economic costs of environmental degradation. It has argued for incorporation of natural capital into national accounting systems. It has demonstrated the range of financing instruments available, and the key role of private sector investment as well as local communities. For Africa, meeting the requirements of the population today does not have to come at the expense of future generations.

The potential is there for inclusive, sustainable green growth for all.
ANNEX I

Priorities for Countries by Business Line and CMU
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<tr>
<th>Countries</th>
<th>Renewable Natural Resources</th>
<th>Livable Urban Environments</th>
<th>Managing Climate Change And Natural Disasters</th>
<th>Managing Oil, Gas, And Mining Sustainably</th>
<th>Implementing The Infrastructure Agenda While Mitigating Risks</th>
<th>Improving Enabling Environment For Responsible Investment Through Environmental Governance</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFCS1 Botswana</td>
<td>Continuing sustainable nature conservation (3)</td>
<td>Managing increasing water scarcity &amp; drought (1)</td>
<td>Supporting environmental management in the energy industry (2)</td>
<td>Sustainable transport management (4)</td>
<td>Environmentally sound healthcare waste management (5)</td>
<td></td>
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<tr>
<td>Lesotho</td>
<td>Sustainable land management; address erosion and nature conservation (3)</td>
<td>Managing urban expansion including improved water quality (4)</td>
<td>Strengthening resilience to water scarcity (2)</td>
<td>Environmental management of dams, reservoirs, and water resources (1)</td>
<td>Strengthen EA capacity including environmental information systems; Improved healthcare waste management (5)</td>
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<tr>
<td>Namibia</td>
<td>Sustainable tourism management (1)</td>
<td>Flood and disaster risk management, with focus on land use planning (2)</td>
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<tr>
<td>Swaziland</td>
<td>Sustainable land management and erosion control (1)</td>
<td>Drought and disaster management; managing water stress (2)</td>
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<tr>
<td>South Africa</td>
<td>Nature conservation &amp; ecotourism (3)</td>
<td>Low carbon energy development and strengthened disaster risk management (1)</td>
<td>Mitigating pollution risks of energy development (2)</td>
<td></td>
<td>Using country systems for economic development (4)</td>
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<tr>
<td>AFCS2 Angola</td>
<td>Woodland management and biodiversity conservation (3)</td>
<td>Sanitation, solid waste and flood management (1)</td>
<td>Reducing coastal pollution from oil and urban development (4)</td>
<td>Environmental management with infrastructure and energy development (2)</td>
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<tr>
<td>Mozambique</td>
<td>Address deforestation and sustainable land management; Support fisheries and coastal livelihoods; Support tourism and nature conservation (3)</td>
<td>Improved urban planning (5)</td>
<td>Strengthen resilience in transport, agriculture, water management and disaster preparedness (floods, droughts, coastal storms) (2)</td>
<td>Manage environmental impacts of mega projects (1)</td>
<td>Support political commitment to improved environmental management of large infrastructure; Support decentralized institutions; Healthcare waste management. (4)</td>
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<tr>
<td>Sao Tome and Principe</td>
<td>Fisheries (1)</td>
<td>Disaster Risk Mgt. (2)</td>
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<tr>
<td>Malawi</td>
<td>Integrated watershed and sustainable land management in Shire basin and Lake Malawi; nature conservation (1)</td>
<td>Flood, drought and disaster management, mainstream climate risk into development especially agriculture (2)</td>
<td>Strengthen EA systems and manage mining legacy issues (5)</td>
<td>Protect hydro-power through watershed mgt. (3)</td>
<td>Strengthen EA systems with focus on mining, infrastructure, and agriculture (4)</td>
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<tr>
<td>Zambia</td>
<td>Sustainable water resources, land and ecosystems management; sustainable eco-tourism mgt. (3)</td>
<td>Urban water and sanitation (4)</td>
<td>Drought and flood management (2)</td>
<td>Address mining legacy &amp; remediation (1)</td>
<td>Support EITI ++ and environment assessments systems management. (5)</td>
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<tr>
<td>Zimbabwe</td>
<td>Support sustainable eco-tourism (5)</td>
<td>Improve sewerage &amp; sanitation (2)</td>
<td>Improve resilience of farming systems to drought (1)</td>
<td>Mining remediation and legacy issues, adoption of equator principles; Land use issues between farmers &amp; miners (6)</td>
<td>Sustainable energy and transport dev. (3)</td>
<td>Regulations on ecosystems &amp; mining remediation, especially regarding impact on people; Strengthen NGO advocacy and property rights; and strengthening EA systems for health care management. (4)</td>
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<tr>
<td>Comoros</td>
<td>Fisheries (1)</td>
<td>Disaster risk management. (2)</td>
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<tr>
<td>Madagascar</td>
<td>Tourism and nature conservation with community involvement; Address illegal logging (1)</td>
<td>Strengthen resilience with focus on coastal areas &amp; citizens’ adaptive capacity (2)</td>
<td>Improve environmental management. in mining (4)</td>
<td></td>
<td>Strengthen local participation in environmental management. and governance (3)</td>
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<td>Mauritius</td>
<td>Improve integrated land use planning and fisheries management. (2)</td>
<td>Addressing coastal vulnerabilities and impact on tourism (1)</td>
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<td>Support implementation of strategic environmental impact assessments and country systems (3)</td>
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<tr>
<td>Seychelles</td>
<td>Fisheries (1)</td>
<td>Disaster risk management. (2)</td>
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<tr>
<td>Tanzania</td>
<td>Sustainable land and water resource management; forestry, coastal zone, fisheries andhttp://www.nema.go.tz/</td>
<td>Sustainable infrastructure dev. (2)</td>
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<tr>
<td></td>
<td>urban planning (1)</td>
<td>EA systems and coffee dev. (2)</td>
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<tr>
<td>Burundi</td>
<td>Address pollution from mining, including mercury, through broad EIA (6)</td>
<td>Build on ongoing support for a green growth strategy (5)</td>
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<tr>
<td>Kenya</td>
<td>Mainstream climate change in dev. strategies (4)</td>
<td>Build environment transport infrastructure and water resource development (2)</td>
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<tr>
<td>Uganda</td>
<td>Mainstream climate change in dev. strategies (4)</td>
<td>Management of transport infrastructure and water resource development (2)</td>
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<tr>
<td>Eritrea</td>
<td>Address forest, wetland, water and sustainable land management (2)</td>
<td>Environmental management of oil and gas dev. (3)</td>
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<tr>
<td>Somalia</td>
<td>Watershed restoration for water harvesting, land husbandry, irrigation and wetland management (2)</td>
<td>Environmental management of oil and gas dev. (3)</td>
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</tbody>
</table>

Countries are organized by country units and numbers represent orders of priority.
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<table>
<thead>
<tr>
<th>Countries</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>AFCE3</strong></td>
<td><strong>Ethiopia</strong></td>
<td>Address land degradation / deforestation through landscape restoration (1)</td>
<td>Urban air quality, sanitation and solid waste and improvement of spontaneous settlements (5)</td>
<td>Continue progress with mainstreaming climate risk into agriculture/ livestock and water management; Take advantage of innovative climate finance (3)</td>
<td>Mainstream environmental management into design of large infrastructure projects (hydro, water resource development and transport) (2)</td>
<td>Strengthen environment management especially at regional/local level through public sector management/SWAP approaches; Support non-state actors/NGOs to participate in environmental management; Mainstream green growth into the strategic investment framework (4)</td>
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<tr>
<td><strong>AFCE4</strong></td>
<td><strong>Sudan</strong></td>
<td>Integrated approach to land, forest and water resource management (1)</td>
<td>Drought management (3)</td>
<td>Sustainable dam management (4)</td>
<td>Operationalization of laws and regulations (2)</td>
<td></td>
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<tr>
<td><strong>South Sudan</strong></td>
<td></td>
<td>Focus on environmentally sound service delivery (2)</td>
<td></td>
<td>None</td>
<td>Strengthen local CDD approaches (1)</td>
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<tr>
<td><strong>AFCC1</strong></td>
<td><strong>Cameroon</strong></td>
<td>Forests, nature conservation &amp; fisheries, linked to the governance agenda (5)</td>
<td>Especially sanitation in Douala (4)</td>
<td>With a focus on coastal areas and the north (6)</td>
<td>Both hydro-electric energy &amp; transport (1)</td>
<td>With a focus on natural resource based industries (3)</td>
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<tr>
<td><strong>Central African Republic</strong></td>
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<td>Support improved forestry and wildlife management (2)</td>
<td>Address urban waste management (1)</td>
<td>Control erosion &amp; floods (3)</td>
<td></td>
<td>Strengthen EA capacity (4)</td>
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<tr>
<td><strong>Equatorial Guinea</strong></td>
<td></td>
<td>Improve forest management and address poaching (4)</td>
<td>Address urban pollution (6)</td>
<td>Address coastal flooding and take advantage of climate finance opportunities for forests (5)</td>
<td>Address coastal pollution from hydro-carbons (2)</td>
<td>Strengthen frameworks for environmental assessments and monitoring (1)</td>
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<tr>
<td><strong>Gabon</strong></td>
<td>Fisheries, forestry &amp; biodiversity (1)</td>
<td>Solid waste &amp; coastal pollution (2)</td>
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<td>Focus on roads (4)</td>
<td>Environmental governance; Industrial Pollution Prevention (3)</td>
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<tr>
<td>DRC</td>
<td>Sustainable forest, agro-forest and protected area management (1)</td>
<td>Focus on solid waste, sanitation &amp; drainage (4)</td>
<td>Take advantage of mitigation finance for forests and energy (5)</td>
<td>Focus on safety and environmental impacts for artisanal mining (6)</td>
<td>Incorporate environmental and social management measures in infrastructure operations design (2)</td>
<td>Implement environmental assessment legislation; Support institution building; strengthen civil society (3)</td>
</tr>
<tr>
<td>Republic of Congo</td>
<td>Managing forests and biodiversity sustainably (2)</td>
<td></td>
<td></td>
<td>Addressing pollution in oil and mineral development (3)</td>
<td>EA in infrastructure development (e.g. port) (4)</td>
<td>With a focus on forest industries and mining (1)</td>
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<tr>
<td>Ghana</td>
<td>Sustainable fisheries, forests and land management (1)</td>
<td>Focus on sanitation, drainage, solid waste, and water management (3)</td>
<td>Focus on integration in sector policies (5)</td>
<td>For mining focus on legacy issues (remediation, monitoring); For oil and gas on managing impacts (2)</td>
<td>Focus on water resources and transport (6)</td>
<td>Build capacity especially at local level (4)</td>
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<tr>
<td>Sierra Leone</td>
<td>Forest, biodiversity and fisheries management to benefit local communities (2)</td>
<td></td>
<td>Mining (1)</td>
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<td>Mainstreaming environmental governance into sector policies (3)</td>
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<tr>
<td>Liberia</td>
<td>Improve forest management, focusing on three Cs (community, concessions, and conservation) (2)</td>
<td>Managing drainage, sanitation &amp; solid waste (1)</td>
<td>Mitigation through forestry management (5)</td>
<td>Supporting sustainable mining development (3)</td>
<td>Strengthening institutional capacity for infrastructure development (6)</td>
<td>Strengthen public sector environmental capacity (e.g., EITI, VPA) (4)</td>
</tr>
<tr>
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<td><strong>AFCW2</strong></td>
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<tr>
<td>Nigeria</td>
<td>Address land degradation, deforestation, watershed mgmt., and soil erosion; address environmental issues in agricultural dev. (1)</td>
<td>Manage urban waste, air and industrial pollution including hazardous waste mgmt. (2)</td>
<td>Address coastal sea level rise and flooding in the South, desertification and drought in the North; improve energy efficiency and transport mgmt.; improve energy policies; improve cook stoves and renewable energy (5)</td>
<td>Strengthen regulations for mining dev.; strengthen EA capacity and EMP implementation and monitoring for electricity and gas (3)</td>
<td>Manage infrastructure dev. sustainably (6)</td>
<td>Improve environmental enforcement and monitoring at central and regional levels; support EA in the PPP APL (4)</td>
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<tr>
<td><strong>AFCW3</strong></td>
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<tr>
<td>Mali</td>
<td>Sustainable land management (1)</td>
<td>Improving urban air quality, drainage and solid waste mgmt. (3)</td>
<td>Address desertification &amp; drought mgmt. and integrate climate risk into broader development Expand renewable energy (2)</td>
<td>Sustainable energy dev. (4)</td>
<td>Strengthen the environmental regulatory framework (5)</td>
<td></td>
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<tr>
<td>Guinea</td>
<td>Address coastal degradation and support tourism dev. in protected areas; sustainable forestry mgmt. (2)</td>
<td>Focus on solid waste &amp; sanitation, and urban land use planning (3)</td>
<td>Mitigation through forest mgmt. (5)</td>
<td>Address environment, including impact on water and ecosystems, in large-scale mining development (1)</td>
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<td>Set up EA and environment management capacity</td>
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<td></td>
<td><strong>Guinea</strong></td>
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<tr>
<td>Niger</td>
<td>Improve land and water management (2)</td>
<td>Enhance municipal waste management (3)</td>
<td>Address climate resilience and related social protection (1)</td>
<td>Address water pollution connected with mining development (5)</td>
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<td>Support EA capacity building (4)</td>
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<tr>
<td>Chad</td>
<td>Sustainable land management restoration of Lake Chad, reverse biodiversity loss (1)</td>
<td>Address desertification and improve resilience (2)</td>
<td>Manage environmental impacts of oil industry (3)</td>
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<td>Strengthen regulations and capacity for EA (4)</td>
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<tr>
<td>AFCFI</td>
<td>Senegal</td>
<td>Sustainable land management; fisheries; improved urban land use planning (2)</td>
<td>Sanitation, flooding and solid waste management; improved land use planning (1)</td>
<td>Coastal erosion and CZM; climate proofing infrastructure; disaster management (3)</td>
<td>Sustainable management of transport, energy and telecommunication (5)</td>
<td>Environmental expenditure, improved legislation/regulations for adaptation (4)</td>
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<td>Cape Verde</td>
<td>Fisheries (1)</td>
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<td>Disaster risk management (2)</td>
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<tr>
<td>Guinea Bissau</td>
<td>Manage coastal ecosystems and protected areas (1)</td>
<td></td>
<td>Sustainable mining development (3)</td>
<td>Sustainable port and electricity development (4)</td>
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<td>Strengthen EA legislation &amp; citizens engagement (2)</td>
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<td>Mauritania</td>
<td>Sustainable land, livestock, and fisheries management (2)</td>
<td>Through integrated urban development (5)</td>
<td>Drought, desertification control, and coastal protection (3)</td>
<td>Sustainable port management (1)</td>
<td>Integration of sustainable in PRSP process and strengthening EA systems; Healthcare waste management (4)</td>
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<tr>
<td>Gambia</td>
<td>Natural resource degradation; Sustainable tourism (3)</td>
<td>Coastal erosion and drought inland (1)</td>
<td>Focus on transport, energy and communication (4)</td>
<td>With a focus on citizen engagement; Healthcare waste management (2)</td>
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<tr>
<td>Benin</td>
<td>Protected area management (2)</td>
<td>Municipal waste, waste-water and drainage mgt. (1)</td>
<td>Addressing coastal erosion, sea level rise and flooding (3)</td>
<td>Sustainable transport and telecommunication management (4)</td>
<td>Local ownership for improved air and water quality regulations as well as broader implementation of environmental regulations and EIA (5)</td>
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<tr>
<td>Burkina Faso</td>
<td>Sustainable land management, wood and landscape mgt, and nature conservation (1)</td>
<td>Urban water and sanitation (4)</td>
<td>Strengthen resilience especially at local level, and take advantage of mitigation co-benefits in natural resource management (2)</td>
<td>Sustainable mining dev. (6)</td>
<td>Strengthen environment and natural resource management at local level; mainstreaming environment in growth pole initiatives (3)</td>
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<tr>
<td>Togo</td>
<td>Sustainable land management, reversing deforestation, bushmeat mgt. (2)</td>
<td>Sanitation &amp; solid waste (1)</td>
<td>Addressing coastal degradation and lagoon salinization (3)</td>
<td>Strengthen the environmental management regulatory and institutional frameworks (with focus on energy and mining) (4)</td>
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<tr>
<td>Cote D’Ivoire</td>
<td>Strengthen regulatory framework for forests and improve nature conservation (5)</td>
<td>Solid waste management &amp; urban air pollution (Abidjan) (3)</td>
<td>Manage mining impacts (diamonds, nickel, gold) (2)</td>
<td>Sustainable infrastructure development (1)</td>
<td>Regulatory frameworks; Environmental information systems; Strengthen decentralized institutions (4)</td>
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ANNEX II

Key Expected Results by Business Line

The results framework identifies programs by business line in a number of countries based on the priorities outlined in Annex I. The footnotes below are listing all countries that identified these actions as priorities.
### BUSINESS LINE

**MANAGING RENEWABLE NATURAL RESOURCES FOR GROWTH AND ECOSYSTEMS AND SUSTAINABILITY**

- Improved fisheries programs underway in nineteen countries;¹
- Average deforestation rates reduced from 0.5 percent to 0.4 percent and improved woodland/landscapes/forests management programs/actions underway in fifteen countries;²
- Programs to address land degradation/watershed management underway in seventeen countries;³
- Protected area management/ecotourism programs underway in sixteen countries;⁴
- Improved lake and river basin management programs in six major ecosystems.⁵

**IMPROVING THE LIVABILITY OF THE URBAN ENVIRONMENT**

- Programs addressing drainage/sanitation/solid waste management and improved environmental service delivery underway in eighteen countries;⁶
- Improved air quality management programs underway in two countries.⁷

**MAKING DEVELOPMENT CLIMATE RESILIENT AND PROMOTING LOW CARBON GROWTH**

- Climate change/disaster risk identified as a core development issue in 90 percent of new country partnership strategies;
- Programs supported through climate investment funds successfully underway in all selected countries;
- Climate resilience/disaster risk programs underway in twenty countries;⁸
- Promoting low carbon growth/taking advantage of mitigation financing opportunities in eleven countries.⁹

**MANAGING DEVELOPMENT OF MINING, OIL, AND GAS SUSTAINABLY**

- Environmental and social mitigation measures incorporated in eighteen¹⁰ oil/gas mineral country policies/programs.

**ENHANCING ACCESS TO ENERGY AND WATER AND INCREASING CONNECTIVITY WHILE MITIGATING ENVIRONMENTAL RISKS**

- Environmental management plans incorporated into all major new infrastructure programs;
- Supervision rating for environmental management rated satisfactory for 80 percent of ongoing programs.

**IMPROVING THE ENABLING ENVIRONMENT FOR RESPONSIBLE INVESTMENT THROUGH TRANSPARENT, ENVIRONMENTAL REGULATIONS AND INSTITUTIONS**

- Country Performance and Institutional Assessment (CPIA) rating for Indicator 11 (environment) improved by 0.5 percent overall;
- Improved environmental management incorporated in development policy lending/investment lending for twenty countries.¹¹

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¹ Mauritania, Senegal, Cape Verde, Guinea Bissau, Liberia, Guinea, Sierra Leone, Ghana, Gabon, Namibia, Mozambique, Madagascar, Comoros, Tanzania, Kenya, Somalia, Sao Tome, Seychelles, Mauritius, Gambia (nineteen have active programs).
² Burkina Faso, Ghana, DRC, Congo Republic, Guinea, Gabon, CAR, Sudan, Ethiopia, Uganda, Tanzania, Mozambique, Angola, Cameroon, Equatorial Guinea, Sierra Leone, Liberia, Togo, Cote d’Ivoire, Madagascar (fifteen have active programs).
³ Mauritania, Burundi, Senegal, Mali, Burkina Faso, Niger, Chad, Sudan, Ethiopia, Somalia, Nigeria, Kenya, Uganda, Malawi, Lesotho, Swaziland, Zambia, Tanzania, Eritrea, Rwanda, Guinea, Togo (seventeen have active programs).
⁴ Botswana, Lesotho, Namibia, South Africa, Angola, Mozambique, Malawi, Zambia, Madagascar, Zimbabwe, Rwanda, Cameroon, Gabon, DRC, Sierra Leone, Guinea, Guinea-Bissau, Ghana, Benin, Burkina Faso, Cote d’Ivoire (sixteen have active programs).
⁵ Lake Victoria, Lake Tanganyika, Lake Malawi (also known as Lake Nyasa and Lago Niassa). Priority river basins include the Zambezi, Limpopo, Niger, Senegal, Nile and Volta.
⁶ Lesotho, Angola, Mozambique, Zambia, Tanzania, Uganda, Kenya, Ethiopia, South Sudan, Cameroon, CAR, Equatorial Guinea, Gabon, DRC, Ghana, Liberia, Nigeria, Mali, Guinea, Niger, Senegal, Mauritania, Senegal, Burkina Faso, Togo, Cote d’Ivoire (eighteen have active programs).
⁷ Cote d’Ivoire, Benin, Mali, Nigeria, Ethiopia, Kenya (two have active programs).
<table>
<thead>
<tr>
<th>KEY KNOWLEDGE PRODUCTS</th>
<th>ANTICIPATED RESULT WITHIN FIVE YEARS</th>
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<tr>
<td>ECONOMIC COSTS OF ENVIRONMENTAL DEGRADATION</td>
<td>• Programs in four countries</td>
</tr>
<tr>
<td>WEALTH ACCOUNTING AND VALUATION OF ECOSYSTEM SERVICES (WAVES)</td>
<td>• Programs in two countries</td>
</tr>
<tr>
<td>ENVIRONMENTAL IMPACTS FROM MINING POLLUTION</td>
<td>• Programs in four countries</td>
</tr>
<tr>
<td>ENVIRONMENTAL IMPACTS FROM POOR AIR QUALITY</td>
<td>• Programs in four countries</td>
</tr>
<tr>
<td>CLIMATE CHANGE – INCREASING INFORMATION ON CLIMATE VULNERABILITY AND CHANGE</td>
<td>• Programs in ten countries</td>
</tr>
<tr>
<td>STRATEGIC ENVIRONMENT AND SOCIAL ASSESSMENT (SESA) RELATED TO INFRASTRUCTURE, MINING, ENERGY, GROWTH-POLE DEVELOPMENTS</td>
<td>• Programs in eight countries</td>
</tr>
</tbody>
</table>

Chad, Senegal, Cape Verde, South Africa, Mauritania, Gambia, Benin, Burkina Faso, Togo (twenty have active programs).


10 Botswana, South Africa, Malawi, Zambia, Zimbabwe, Madagascar, Tanzania, Uganda, Cameroon, Equatorial Guinea, DRC, Ghana, Sierra Leone, Liberia, Nigeria, Guinea, Niger, Chad, Guinea-Bissau, Burkina Faso, Cote d’Ivoire (fifteen have active programs).

11 Botswana, Lesotho, South Africa, Mozambique, Malawi, Zambia, Zimbabwe, Madagascar, Mauritius, Tanzania, Burundi, Uganda, Kenya, Rwanda, Ethiopia, Sudan, South Sudan, Cameroon, CAR, Equatorial Guinea, Gabon, DRC, Republic of Congo, Ghana, Sierra Leone, Liberia, Nigeria, Mali, Guinea, Niger, Chad, Senegal, Guinea-Bissau, Mauritania, Gambia, Benin, Burkina Faso, Togo, Cote d’Ivoire (twenty have active programs).