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Africa Region
THE WORLD BANK

Forests, Trees, and Woodlands in AFRICA

An Action Plan for World Bank Engagement

PROFOR

Foreword

This report outlines an approach for World Bank engagement in forests, woodlands and trees on farms in Sub-Saharan Africa over the next five years. It takes the framework of the 2011 Africa Strategy, "Africa's Future and the World Bank's Support," but is also guided by the 2002 Forest Strategy, which highlighted the role of forests in economic development, poverty reduction, and environmental sustainability including protection of global public goods. This report also draws on the Africa Region's Agricultural Action Plan, which highlighted the role that wooded landscapes play in contributing to the productivity, risk management and environmental services pillars of the 2012 Environment Strategy. The approach outlined here is congruent with the policy messages contained in the 2010 World Development Report, Development and Climate Change.

This report argues that forests in Africa have too often been viewed narrowly as a source of export revenues from industrial timber on the one hand, or on the other hand, as global public goods. In reality, forests and woodlands play a much broader, two-fold role: *first,* forests serve as a diverse source of jobs and livelihoods for African economies and citizens; and, *second*, forests provide valuable ecosystem services, increasing resilience through protecting watersheds and stream-flows, controlling erosion, enhancing soil fertility, regulating the climate and protecting biodiversity. The contributions that forests make to export revenue earnings and their role as global public goods are nonetheless important, but relatively small subsets of the broader roles outlined above.

The Action Plan has two overarching, linked messages. The first is that enhanced and sustained engagement is an essential first-step for sustainable management of forests. The second is that for many African countries, the most effective approaches will lie outside traditional forestry institutions, and will necessarily involve working through operations and reforms supported through other sectors.

Looking forward, the action plan focuses on forests and woodlands as providers of household energy and as sources of employment from a vibrant, mostly domestic, but also export-oriented wood industry. It argues for providing the enabling environment where farmers can invest in trees as part of farmland restoration, and support forest-based eco-tourism. It seeks to highlight the heavy economic costs of deforestation and forest degradation, and calls for reversing erosion that results in crop failures and power outages. It aims to take advantage of the opportunities forests offer to contribute to the global public goods agenda, in particular climate change adaptation and mitigation, and biodiversity conservation.

The Action Plan addresses seven major themes: sustainable production and value chain development for wood-fuel and charcoal industries; landscape and watershed restoration; improved plantation management; increased productivity and formality in the domestic timber industry; enhanced protected area management; improved forest concession management; and development of mechanisms for reducing emissions from deforestation and forest degradation. Strengthened, transparent institutions and sound governance at local and central levels are key aspects of the sustainable forest management agenda, as are improved land tenure regimes, strengthened forest data and information systems and incentives for effective implementation of forest projects.

In making these arguments, the Action Plan takes a sub-regional approach to identifying priorities and recognizing the diversity of the region. It emphasizes the role of partnerships in implementation, including the role of civil society organizations and citizens, as well as knowledge institutions and development partners.

This report is the outcome of studies supported by the Program on Forests (PROFOR) and draws heavily on the work of many people in the Africa Region. It was prepared by Marjory-Anne Bromhead, with guidance from Simon Rietbergen, Carole Megevand and Idah Pswarayi-Riddihough, contributions from Halit Sandbank, Cyril Ngoua and Tuukka Castren, and editorial assistance from Leoncie Niyonahabonye.

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Acronyms

AFTEN	Africa Environment and Natural Resource Management Unit
AGRA	Alliance for a Green Revolution in Africa
APL	Adaptable Program Loan
ARD	Agriculture and Rural Development Department
AU	African Union
CAAD	Comprehensive Africa Agricultural Development
CAR	Central African Republic
CAS	Country Assistance Strategy
CDM	Clean Development Mechanism
CGIAR	Cooperative Group on International Agricultural Research
CLASlite	Carnegie Landsat Analysis System Lite
CO_2	Carbon Dioxide
COMIFAC	Commission des Fôrets d'Afrique Centrale
CI	Conservation International
CPIA	Country Performance and Institutional Assessment
DAC	Development Assistance Committee (of the OECD)
DPL	Development Policy Loan
DPO	Development Policy Operation
DRC	Democratic Republic of Congo
ENRA	Enzyme Refiners Association
ESSD	Environment and Social Sustainable Development Department
EU	European Union
FAO	Food and Agriculture Organization
FCPF	Forest Carbon Partnership Facility
FIP	Forest Investment Program
FLEGT	Forest Law Enforcement Governance and Trade
FPD	Finance and Private Sector Development
GDP	Gross Domestic Product
GEF	Global Environment Facility
GFDDR	Global Facility for Disaster Risk Reduction
GHG	Greenhouse Gas
GIS	Geographic Information System
GLIN	Global Legal Information Network
GPS	Global Positioning System
GRL	Green Resources Limited
GTZ	Deutsche Gesellschaft fur Internationale Zusammenarbeit (now known as GIZ)
HIPC	Highly Indebted Poor Countries
IBRD	International Bank for Reconstruction and Development
ICT	Information, Communications and Technology
IDA	International Development Association
IFC	International Finance Corporation
IIED	International Institute for Environment and Development
IUCN	International Union for the Conservation of Nature
KFW	Kreditanstalt fur Wiederaufbau
LiDAR	Light Detecting and Ranging
MDG	Millennium Development Goal
MODIS	Moderate Resolution Imaging Spectro-radiometer
MRV	Monitoring Reporting and Verification
NEPAD	New Economic Partnership for Africa's Development
NGO	Non-governmental Organization
NRM	Natural Resource Management
NTFP	Non-timber Forest Products

OECD	Organization for Economic Cooperation and Development
OPCS	Operational Policy and Country Services
PAC CR	Programme D'Action Communautaire pour la Resilience Climatique (Niger)
PDA	Personal Digital Assistant
PEFC	Program for the Endorsement of Forest Certification
PES	Payment for Environmental Services
PPCR	Pilot Program for Climate Resilience
PREM	Poverty Reduction and Economic Management
PROGEDE	Sustainable and Participatory Energy Management Program (for Senegal)
PROFOR	Program for Forests
REDD	Reduced Emissions from Deforestation and Forest Degradation (often used interchangeably with "REDD+")
REDD+	Reduced Emissions from Deforestation and Forest Degradation and Sustainable Forest Management
RPTES	Review of Polices in the Traditional Energy Sector (Senegal)
SGS	Société General de Surveillance
SMME	Small and Medium Enterprises
SPGS	Saw-log production grant scheme
SREP	Strategic Renewable Energy Program
TRAFFIC	Wildlife Trade Monitoring Network
TWICT	Transport, Water, Information and Communication Technology
UNEP	United Nations Environment Program
VPA	Voluntary Partnership Agreement
WAVES	Wealth Accounting and Valuation of Ecosystems Services Initiative
WOCAT	World Overview of Conservation Approaches and Technologies
WRI	World Resources Institute
WTS	Wood Tracking System

Africa Forests, Trees, and Woodlands in Africa: An Action Plan for World Bank Engagement

Executive Summary

Introduction

The purpose of this paper is to outline an approach for Bank engagement in forests, trees, and woodlands on farms in Sub-Saharan Africa[1] for the coming five years. The paper takes the framework of the Africa Development Strategy,[2] which has two main pillars: supporting employment and competitiveness, and building resilience and reducing vulnerability; and one underlying foundation: strengthening capacity and governance. It is consistent with the pillars of the Bank Forest Strategy from 2002, which highlight the contribution of forests to economic development, poverty reduction, and protection of global public goods. Several other World Bank corporate strategies are also relevant for the implementation of this Action Plan.[3]

In the implementation of the Action Plan, the World Bank will build on its comparative advantages regarding cross-sectoral experiences, knowledge, convening power, and ability to share experiences across regions.

The primary messages of this paper are linked:

1. ***Enhanced forest, tree and woodland management can play a key role in achieving the goals of the Africa Strategy***. *Employment generation, improving competitiveness as well as building resilience and reducing vulnerability are the overall objectives of the World Bank's forest engagement in Sub-Saharan Africa.*
2. ***In many countries the most effective approaches will be outside the traditional forestry institutions and will involve working through operations and reforms supported through other sectors.***

[1] Hereinafter referred to as Africa
[2] The Strategy, entitled "Africa's Future and the World Bank's Support for It" was published in March 2011 following an extensive consultation process.
[3] Including draft Energy Strategy, draft Environment Strategy, the Africa Climate Resilient Development Strategy, the Agricultural Action Plan 2010–2012, GAC strategy and draft ICT strategy

Because of Africa's geographical diversity, there is also wide variation between sub-regions and countries on priority areas for engagement. Therefore, the Action Plan is differentiated by sub-region and highlights major challenges and opportunities in the Sahel, humid West Africa, Central Africa, Eastern, and Southern Africa, respectively.[4] At the same time, there are some underlying themes and investment opportunities that cut across the sub-regions.

Total forest area in Africa is estimated at 675 million ha, or about 23 percent of land area, with wooded landscapes (trees outside forests) accounting for another 13 percent, or 350 million ha. Five countries: DR Congo, Sudan, Angola, Zambia, and Mozambique account for half of this forested area. Dryland forest areas in Southern and Eastern Africa and the Sahel constitute the majority of forested landscapes by area.

Deforestation and forest degradation have slowed down marginally in Africa over the last decade. They still remain serious concerns however, especially in densely populated humid West African countries and some countries in Eastern and Southern Africa. Forest degradation is largely poverty-related, caused by clearing of wooded land for low productivity agriculture. Because of this, increasing agricultural productivity on existing farmland and reversing forest degradation are linked agendas.

Economic growth has improved over the last decade. In 2001–2010, the average annual GDP growth rate was 4.8 percent, compared to only 2.3 percent in the previous decade 1991–2000. Urbanization has also been rapid and will only continue. Yet while the percentage of people living in poverty has fallen, over 230 million people are still deemed "food insecure." Economic growth provides opportunities for improving social outcomes, building institutions and creating jobs, moving up the value chain and improving

[4] IFC would play an important role in implementation of a World Bank group business development plan for forests in Africa, but this particular document focuses on the work of IBRD/IDA within the World Bank group.

productivity, as well as for the restoration of landscapes through longer term investments, poverty reduction and "human capital" enhancement. Mining and infrastructure investments bring opportunities but need to be carefully managed to minimize impact on forests and broader ecosystem functions.

Nevertheless, the overall business climate remains challenging. In the "Doing Business" report published by the World Bank and the IFC, the average ranking for Sub-Saharan countries was 137 of 183 countries studied. The poor business climate discourages long-term business planning and encourages informality, especially for smaller enterprises. More sustainable forest and woodland management, and moving the products value chain up are also closely linked to broader improvements in the business environment.

Change in access to information has been phenomenal; the number of cell phone subscriptions increased almost six-fold in only five years from 2004 to 2009. In 2009, Africa had over 310 million cell phone subscriptions and recent press reports estimate that the number could have already passed half a billion. Access to the Internet has shown a similar trend and in 2009, almost every tenth African was an Internet user. New technologies have dramatically improved communication and access to information. They provide opportunities for more efficient and competitive economic activity, interaction between government and citizens at all levels, and create opportunities for more transparent decision-making and implementation processes (improved governance).

Like many others, the forest sector is only beginning to make use of the potential of ICT. But there are interesting examples of ICT innovation in Africa, including in Kenya (crowd source mapping, mobile banking, and participatory wildlife management), Congo (working with indigenous peoples to map and exclude their key livelihood areas from timber harvesting in certified concessions), Madagascar (real-time fire alerts), South Africa (game density mapping) as well as Ghana and Liberia (chain-of-custody for timber legality verification). Despite the growth in ICT access, over 70 percent of Africans still lack access to electricity and the proportion lacking access is much higher in rural areas.

Contribution of Forests, Trees, and Woodlands to African Development

Forests, woodlands, and trees play a key role in African economies, providing a substantial source of employment and economic growth as well as contributing to risk reduction and resilience strategies:

- These resources are the main source of household energy in Africa, with 82 percent of households relying on fuel-wood and charcoal for cooking and heating. Demand is expected to increase by 20 percent over the 2010–2030 period. The charcoal value chain is a major economic activity, through production, transport, and marketing.

- Forests, woodlands, and trees provide materials for domestic construction, furniture, and mining industries, for growing urban populations, and in some countries are significant sources of export revenue.

- Trees and woodlands directly enhance fertility and productivity in agricultural landscapes, help control erosion (and hence enhance resilience) and are also a direct source of fuel, timber, food, and animal fodder. They can also prolong the life of major infrastructure schemes by controlling siltation (into reservoirs) and by stemming the collapse of roads due to soil erosion.

- Forests play a key role in broader watershed protection, protection of coastlines, and climate regulation through carbon storage.

- These resources provide fodder for livestock and a range of non-timber forest products including fruit, nuts, oils, medicinal plants, and bush-meat. These have commercial value but can also provide basic food needs in times of drought.

- Forested landscapes and the wildlife they contain are the basis for tourism industries in some countries, but they also harbor globally important biodiversity.

- Forests have important social and cultural values.

But their value is not reflected in GDP figures. This is for a variety of reasons:

- *Informality is widespread in the sector and GDP figures do not reflect the value of products produced by the sector.* GDP figures largely reflect the export sector on the one hand, and production from plantations on the other. And they do not reflect the value of timber and non-timber products that are consumed by households. Globally it has been estimated that informal forest enterprises employ up to 10 times the number of people as in the formal industry. In addition, the value created by woodlands and forests may also have ramifications in other sectors.

- *Fuel-wood and charcoal account for 90 percent of timber removals in Africa* or 615 million m^3 annually, but this sub-sector's economic contribution is not reflected in GDP figures. Country-specific studies illustrate its importance: a recent study on Tanzania estimated the annual value of the charcoal business to be US$650 million, creating two million jobs, while a study for Rwanda estimated value-added of fuel-wood and charcoal at five percent of GDP. In contrast, the official contribution of forests and woodlands to GDP is 1.9 percent in Tanzania and 1.3 percent in Rwanda.

- *The figures on industrial timber production often reflect the formal export sector*, while the main source of timber removals, jobs, and economic activity lies in the domestic sector. In Ghana, for example, formal sector employment in the forest sector is 50,000 (mostly in the highly regulated export sub-sector), compared with informal employment estimated at 260,000 (mostly for domestic and regional markets). Total industrial timber removals in Africa are estimated at 72 million m^3 annually, or 4.2 percent of the global total of 1.7 billion m^3. Only five percent of African removals are exported, accounting for a mere three percent of global timber trade. Industrial timber production from Gabon (a heavily forested country) for example, is 3.4 million m^3 annually from 22 million ha, while in Czech Republic it is 16.7 million m^3 from 2.7 million ha.

Another example comes from one segment of the informal forest industry: chainsaw milling. It has been estimated that in Cameroon chainsaw milling employs 45,000 people (three times the industrial timber sector) and stumpage revenue lost annually is $13 million. In Ghana, the figures are 97,000 people and $18 million, and in Liberia, 1500–3900 people and $18–48 million, respectively. Despite its informal nature, the industry is highly organized and the value chains can be exploitative leaving little benefit to local communities.

Forest-based businesses come in different shapes and sizes. Rural small, micro, and medium enterprises (SMMEs) often provide substantial direct employment. At the same time, they may be constrained by the business skills of the owners, and access to financing and markets. Larger companies have better access to the latest technology, international markets, and are not limited to local and often sparse financial markets. The most appropriate strategies for business development depend on natural and socioeconomic conditions. However, there may have been a bias in the past favoring large-scale operators and concessions, and the earlier work on certification and FLEGT may have reinforced duality in the sector. Outgrower schemes are being used successfully in some countries, though still at a limited scale. "Formality" may increase the cost of doing business, "crowding out" small enterprises; the challenge is to provide simple support measures that provide incentives for more sustainable land and resource management.

The value of non-timber forest products, which are major sources of food, fodder and cash incomes in some areas, is not accurately reflected. According to official figures, the value of non-timber forest products is US$0.5 billion for Africa compared with US$8 billion for Europe, where they are of minor economic importance but accurately reflected in official figures. These products also provide an important "safety net" of food for poor rural communities. One extremely valuable non-timber forest product that is widely traded is bush-meat: the meat of wild animals that is harvested by hunting and trapping. The animal protein provided by bush-meat is essential especially in the moist forests of West and Central Africa, where stock-raising is difficult due to the disease environment. The value of bush-meat traded annually in the Congo Basin countries is estimated at US$1.5 billion.

Forest and woodlands provide ecosystem services whose value is reflected in other sectors or not reflected in current price and valuation systems

Forests and trees in agricultural production landscapes enhance soil fertility and agricultural productivity. Farmer-managed forest regeneration programs in Niger, for example, are estimated to have led to a doubling of agricultural yields over nearly five million hectares. Ongoing research is highlighting the potential benefits of large-scale landscape restoration (re-greening) in Africa. It is estimated that further forest regeneration of five million ha, for example, could yield the equivalent of US$500 million in nitrogen fertilization, US$1–1.5 billion from increased maize yields (5–10 million tons) and 30 to 50 million tons of carbon sequestered.

Forests and trees help stabilize watersheds and control downstream erosion, water flows, flood regulation and ecosystem maintenance. Yet this "cross-sectoral and spatial" value is still only beginning to be recognized in Africa. Analysis using established methodologies has estimated the cost to GDP of natural resource degradation at six percent in Ghana and eight to ten percent in Nigeria.

Forests and trees in Africa account for 23 percent of global carbon stored in forests, and deforestation and forest degradation account for 30 percent of Africa's GHG emissions. Forests and trees have the potential to become a significant carbon sink and contribute to climate regulation. In addition, landscape restoration and improved agricultural practices can achieve the "triple win" of improved productivity, enhanced resilience, and reduced emissions.

Africa's forest biodiversity is the basis in some countries for a nature-based tourism industry. In Rwanda and Zambia, for example, forest biodiversity is a major source of employment and foreign exchange earnings. It is also of global biological significance—Cameroon, DRC, and Madagascar are among the world's so-called mega-diversity countries.

This stock of services provided by forests and woodlands is often not reflected in national accounts, which generally notes only direct production values. This disconnect between the actual and reported value of services of forests and woodlands has led to adverse trade-offs between agricultural production and forest cover, resulting in deforestation to open land for agriculture or tree crops.

Because forests and woodlands provide a mix of direct and indirect economic services across sectors, there are public policy challenges in providing the right mix of incentive and regulatory instruments for sustainable management. Governance challenges are often cross-sectoral. Aligning policies and capacity is also a major challenge.

The most effective approaches to forest and woodland management are often through decentralized *structures*. This involves delegating rights and responsibilities for forest and woodland management to local communities, and providing incentives and technical support for investment in trees. This approach has worked well in Tanzania, for example, where support has been given to preparation and implementation of participatory forest management plans covering 4.8 million ha by 2010. In Cameroon, on the other hand, where local communities did not have similar support structures or capacity, community-managed forests have been less effective to date. And in Ghana, where harvesting rights and revenue allocation mechanisms are not aligned with local community interests, deforestation rates are among the fastest-growing in Africa. Clarification of land and tree use rights is crucial. Decentralization also requires that local authorities have adequate

capacity to implement new policies. In some countries, decentralization without capacity building has only led to the decentralization of corruption and other poor governance practices.

Lack of clarity in land use rights and rights to trees, management of "common, open access land," and land-use planning more broadly, has acted as a disincentive for long-term investment in land-based activities, including in trees, woodlots and forest plantations. This issue is linked, in the case of "forest land" to lack of alignment of responsibilities and incentives. It has contributed to the high level of informality of the sector and to continued unsustainable land and forest resource use. Furthermore, institutional fragmentation has led to cases of a particular land area being allocated to overlapping, mutually exclusive uses, e.g. for forestry and mining concession. Nearly 40 percent of industrial timber globally is produced from plantations, but outside of Southern Africa, the sub-sector is the least developed in the region. The main reasons are lack of secure access to land, and lack of access to finance.

The African Union in 2009 endorsed a Land Policy Framework whose vision is to "address land issues in a manner that contributes to political stability, sustainable management of natural resources and enables all stakeholders to achieve high economic growth and a better quality of life." The Bank has developed an approach to land use rights that recognizes that customary and modern systems may exist side by side. Key elements relevant to the forest agenda include: (i) community-based systematic land titling; (ii) integration of land use planning into systematic documentation of land rights; and (iii) surveying, valuation, and improved management of state lands. Low-cost approaches are key for practical implementation, as well as ensuring that the rights of local communities are respected across all three of these elements.

The ecosystem services that forests and woodlands provide are often reflected in other sectors or other *geographical areas, leading to public goods arguments for supporting landscape restoration with appropriate incentives*. Even where the economic benefits accrue on-site, there are trade-offs between upfront investment costs and longer term benefits which justify public support. These factors have been incorporated into policy support measures more extensively outside of Africa than within the continent, but there are examples within Africa and there is scope for these approaches to be scaled up. The Natural Resource Management project in Kenya, as well as the Lake Victoria Environment Management program, both include support for watershed restoration. In addition, a number of programs in Ethiopia support landscape restoration, and two large-scale watershed restoration programs with reforestation elements are under preparation in Nigeria and Malawi. Global public goods values have been modestly supported in the past through GEF funding, and REDD+ will provide new opportunities as long as investments provide local as well as global benefits and there is strong local ownership.

Sustainable forest management requires institutions to work together, locally and at a central level. Sustainable forest management requires a "service delivery" approach that often involves local government, institutions responsible for delivery of agricultural, energy, infrastructure, environment and water services, as well as forests. Cross-sectoral collaboration is a challenge. Sharing benefits with local communities is also crucial to sustainable management of formal forest concessions. Participation of civil society organizations is often useful: in Cameroon, NGOs work with local communities so that these communities become aware of the timber revenues that should be allocated to them. But effective service delivery requires clarity of roles and alignment of resources, capacity and accountability mechanisms with these roles, and there are broader political economy challenges

that need locally-adapted solutions. It is essential that institutions have the means and mandate to "get things done." Decentralization processes have offered opportunities to strengthen forest and woodland management and collaboration across sectors at the local level in several countries, including Niger, Tanzania, and Burkina Faso. Social protection programs, which are often implemented through local institutions, also often offer opportunities for improving woodland and landscape management for local benefits.

Legislation may be more advanced than the resources to implement it, especially in post-conflict countries. In DRC, forest legislation is progressive but forest staff, especially those based in the provinces, still lack most of the resources to fulfill their legal mandate, though there is some improvement as compared to five years ago. Liberia has gone through an extensive reform of legislation since 2005 but there are still huge gaps in implementation capacity. On the other hand, the Republic of Congo now has sufficient fiscal space to build the capacity to implement the reforms enacted in a post-conflict environment under the Highly Indebted Poor Countries initiative (HIPC). Furthermore, systematic approaches to public expenditure analysis which reflect the multi-sectoral nature of forests, woodlands and trees are not well developed.

Institutional development and collaboration across sectors and vertically across levels of administration can be supported through increased use of ICT and by creating and improving applications that support collaboration. ICT developers and public institutions using ICT need to engage with the general public as well. The World Bank's forest specific ICT work has often focused on building information systems within forest administration or chain-of-custody systems (CoC, e.g., in Liberia with PROFOR support). ICTs can be also used to effectively address all forest sector issues that have an information management aspect (e.g. documentation of land and resource use rights, land management, business development, participatory processes).

World Bank Investment in Forests, Trees and Woodlands: Lessons of Experience

Despite their importance, IDA investment in forests and woodlands in Sub-Saharan Africa over the 2007–2010 period totaled only US$291 million dollars, compared with US$3.8 billion overall to agriculture over the same period.[5] GEF provided US$21 million to forests, while the Bio-Carbon Fund provided US$10 million. Except in the Congo Basin countries, there has been little engagement through Country Assistance Strategies to support the improved management of forests, woodlands or trees on farms. This is despite a corporate commitment to re-engage in forests in 2002 following the articulation of a new Bank Forests Strategy. The strategy, developed with widespread consultations, highlighted the role of forests in economic development, poverty reduction and global public goods.[6]

The reasons for the limited level of investment are partly outlined in the preceding section; the economic role of forests, woodlands, and trees is under-valued, the high degree of informality in the sector, the undervaluation of the "resilience" role of forests, and because the benefits from forests and woodlands span across sectors. However because

[5] Agriculture and Rural Development Department 2010 Portfolio Review and background analytical data using the OPCS (Operational Policy and Country Services) coding system.
[6] "Sustaining Forests: A Development Strategy" 2002.

forest investments are also often perceived as difficult due to social and environmental safeguard risks, some of the investments that do exist have faced implementation challenges. Most operations have been small, especially "stand-alone" GEF projects addressing forest biodiversity, with substantial transaction costs. Some may also have been overly complex.

Where operations (or parts of operations) have worked they have generally had clearly defined, modest objectives, and provided the right mix of incentive measures, technical and policy support for achieve these. There are good lessons in this regard from other countries, particularly IBRD countries that have borrowed for forest and landscape management. Examples include a community-based wood energy project in Senegal, which supported local forest management planning and restoration, but also, learning from the experience of the first phase, supported reforms in the charcoal quota system to benefit local institutions, transparency in the charcoal value chain, and improved stoves.

Reforms supported through a broader HIPC program facilitated more transparent concession management systems in Central African Republic and in Republic of Congo.

A protected area management program in Uganda strengthened protected area management planning, institutions and facilities, facilitated wildlife recovery, and has helped form the base for recovery of nature-based tourism, including visits to the iconic mountain gorillas. Reforms in Kenya and Tanzania have improved the enabling environment for private sector investment in management and rehabilitation of plantations. The success of Tanzania in decentralized participatory forest planning has already been mentioned. In Cameroon, a competitive value chain operation is under way to promote value-added and employment through sustainable management of and enhanced value-chains for small and medium enterprises in eco-tourism and timber products. This approach could provide a model for other countries.

There has been Bank support for landscape restoration programs in a number of African countries. All include decentralization, clarification of land and tree rights, investment incentives and a focus on service provision by public sector organizations. The largest scale programs internationally have been in China, which over a 25-year period has succeeded in increasing tree cover from 115 ha to 195 million ha through a range of programs, learning and adapting to local circumstances over time.

There has been growing interest in promoting "evergreen agriculture" in Africa through greater use of trees in the production landscape, and successful experiences in several countries (Burkina Faso, Niger, Zambia, Kenya, Malawi, and Ethiopia) provide a solid base for scaling up these programs. Both the TerrAfrica program and the World Agro-Forestry Centre have provided knowledge platforms in this regard. These re-greening programs provide a range of economic and environmental benefits.

A number of Congo Basin countries have developed legislation requiring that social contracts with local communities be part of concession management plans, though implementation remains challenging. Modern information technology tools help in planning, monitoring, and enforcement. In Congo GPS tools were made available to local forest dwellers by concessionaires to identify trees and areas of socioeconomic and cultural significance, and in Brazil spatial tools track forest actions and can identify illegal activities every seven days. In Gabon, the Bank has supported disclosure and dissemination of environmental legislation through the GLIN (Global Legal Information Network) initiative.

Traditional approaches to forest land-use planning have distinguished between conservation forests (forestland of high biodiversity value); protection forests (forests which are managed primarily for watershed protection but where there might be limited harvesting), and sustainable production forests (forests managed for sustainable timber production). This distinction may be helpful for forest management planning and for protected area management. However, broader integrated landscape approaches with a mosaic of land-use types, are often more suited to community based natural resource management.

Toward an Action Plan

In the light of past experience, the Action Plan would comprise support for seven thematic business areas, all including a mix of policy, investment, and governance measures. The Action Plan is differentiated by sub-region, as not all thematic areas are appropriate for all sub-regions due to Africa's geographical diversity. In the following paragraphs, the thematic areas are first summarized, followed by summaries of the priority areas by sub-region. Many of these thematic areas also span across the two pillars of the Africa Strategy:

1. *Sustainable production and value chain development for wood-fuel and charcoal industries,* to serve domestic urban (and potentially export) markets. Such programs would involve clarification of rights and responsibilities for forest management and production, incentives for reforestation, alignment of charcoal quotas with local incentives, transport management and monitoring, and market regulations. They could also include incentives for adoption of more efficient charcoal processing methods and improved cook stoves. Timber would be harvested largely from community and farmer woodlots, whether planted or naturally regenerated.

2. *Landscape and watershed restoration*, including incorporation of trees in the production landscape and on sloping lands, for enhancement of soil fertility and agricultural productivity, and for direct production of tree products, for soil/moisture conservation and protection, and for biodiversity enhancement. Policy measures would again include clarification of user rights to trees and short-term incentive measures. Watershed restoration would include investment in trees and other non-structural and structural measures, in the context of infrastructure and mining investments, to prevent future and to mitigate past damage, to prolong infrastructure life, and protect agricultural and urban land and ecosystem functions. Approaches could include incorporating these costs in the costs of new infrastructure, and "payments for ecosystem services" approaches.

3. *Plantation management and establishment for a range of timber products in addition to fuel-wood, including building poles, construction timber,* electric poles and furniture. Policy measures would include support for the enabling environment for plantation investment, establishment and maintenance, and clarification of land rights.

4. *Increased productivity and formality in the domestic timber value-added chain* through a range of *r*eforms and incentives to promote improved technologies and reduce waste, support promotion of legalized timber, and formalization of SMMEs.

5. *Protected area management*, through management planning, development of sustainable financing mechanisms for protected areas, eco-tourism promotion, and community-based natural resource management.

6. *Improved forest concession management* in heavily forested countries, including creation of an enabling environment for participatory land use planning, public sector oversight and civil-society based monitoring systems, benefit sharing, enforcement of social contracts and implementation of Voluntary Partnership Agreements (VPA) and other legality initiatives and certification schemes. One specific area will be facilitating business linkages between large-scale timber industries and local SMMEs. Implementation support for VPAs should not only be limited to export-oriented concessions, but should also include domestic markets.

7. *Development of REDD+ (reduced emissions from deforestation and forest degradation) mechanisms and carbon finance,* to help African countries capture potential revenues from the carbon value of forest and woodland restoration and conservation schemes, but also to ensure benefit sharing with local communities and promote co-benefits. Bio-Carbon Fund support for landscape restoration and reforestation/afforestation projects would be expanded both because of the opportunities these present for innovation and learning about future CDM mechanisms, and because the financial support helps to increase financial attractiveness of these operations.

Improved institutional capacity, governance and accountability are priorities cutting across all seven thematic areas, which need to be incorporated as core elements in all activities. One area of institution-building that should receive particular attention is ICT development (information and communication technology), and "e-transformation," not only at the national but also at a decentralized level. Modern information and communication technology supports innovation and can help achieve better development outcomes, especially more efficient, transparent, and accountable administration and public service delivery.

There is also an urgent need to improve the availability and quality of information (e.g. statistical data) in the sector. Information systems can only be as good as the data populating these systems. Mechanisms for improved data and information management for forests, trees, and woodlands need to be incorporated into the design of forest and landscape restoration operations, as well as programs supported by the FCPF (Forest Carbon Partnership Facility). Information on both the "stock" and the "flow" of forest and woodland timber and non-timber forest products needs to be targeted.

Action Plan: A Sub-Regional Approach

The Action Plan is built around the Bank's comparative advantages, in particular its strong country presence and engagement in country dialogue, as well as its convening power, its analytical and operational strengths, its global knowledge, and leading role in emerging global agendas. At the country level there is strong engagement not only with the client but also with development partners, researchers, and civil society organizations. Of particular importance is the Bank's engagement in areas outside of as well as inside of forests

and woodlands (public sector management, governance and capacity building, finance and private sector development, decentralization, and poverty reduction, as well as sectoral engagement), which are relevant to and strengthen the forest and woodlands agenda.

Priorities vary widely by country and sub-region, and in recognition of this diversity, the Action Plan summarizes priorities by sub-region, according to the main thematic areas summarized in Section 4. These are also summarized, grouped within the major pillars and foundations of the Africa Strategy in the attached matrix, which also proposes implementation mechanisms. In all regions, one essential element will be supporting forest stakeholders to collect, use and disseminate information more effectively and accurately. This may often require investments in information systems (including both hardware and software), human capacity, and public dissemination. These programs need to utilize the constantly-improving information networks created by the hundreds of millions of people in Africa with mobile phone and Internet access.

For the Sahel region[7] where dry woodlands play a key role in soil fertility enhancement and provision of food, fodder and fuel in agro-silvi-pastoral systems, and the sub-region faces periodic drought, priorities include:

- Scaling up community-based agro-forestry and community-based forest and woodland management approaches to meet growing demands for biomass energy, fodder and fuel-wood, and to take advantage of the soil fertilization functions that the Sahelian trees provide;

- Supporting private enterprise and value chain development for a range of specialized products from trees and woodlands, such as Shea-nut, gum Arabic, and fruit. This will include appropriate support for forest-product-based SMMEs in formalization, access to business support services (including finance), and integration with larger markets; and

- Building capacity, especially at decentralized level, to deliver the services that citizen need to manage trees and woodlands sustainably.

Government policies regarding tree growing and woodland management and use by farmers and artisans have improved significantly in most countries. The priority is effective service delivery through decentralized institutions, support for market development, and improving the operating environment for small and medium scale enterprises. Of particular importance in the Sahel is the need to protect the use rights of transhumant and nomadic pastoralists whose flocks rely heavily on savannah woodlands for browsing in the dry season.

For Humid West Africa[8] the priorities vary by country, which are highly diverse in terms of ecosystems, economic structure and population densities both between and within countries. These ecosystems include coastal mangrove forests as well as humid forests and dry woodland, densely populated rapidly urbanizing countries, and other ecosystems that are fragile or post-conflict. Priorities include:

[7] Mauritania, Senegal, Cape Verde, Mali, Burkina Faso, Niger, Chad, Sudan, South Sudan, Gambia.

[8] Guinea Bissau, Guinea, Sierra Leone, Cote d'Ivoire, Liberia, Ghana, Togo, Benin, Nigeria. Conditions in the North of countries such as Guinea, Ghana, Togo, Benin and Nigeria are more akin to those in the Sahel sub-region discussed above. Dry woodlands have tended to be neglected in the Humid West African countries as their forestry institutions focused on the moist forests near the coast.

- Support for value-chain enhancement, formalization and loss reduction for the local timber industry, with accompanying measures to improve incentives for sustainable harvesting by aligning access to trees and revenue allocation (the densely populated southern regions of Ghana, Nigeria, whose forests are the most rapidly depleting of any in the region; Côte d'Ivoire and Liberia);

- Improvement of the enabling environment for and access to medium and long term finance for small-holder plantation establishment (all countries);

- Strengthening of decentralized, participatory approaches to forest and woodland management and agro-forestry (all countries);

- Protection of coastal mangrove forests for protection of populations against storm surges and coastal flooding, as well as for conservation of fisheries habitats (coastal areas of Guinea, Guinea Bissau, Sierra Leone and parts of Nigeria), and broader watershed protection and erosion control measures are necessary to protect the "water-towers" and eco-system functions of the major rivers which flow through and originate in this sub-region, especially in the context of planned investments in infrastructure and mining; and

- Taking advantage of REDD+ for more sustainable forest management and for forest landscape restoration.

Payments for Environmental Services (PES) approaches, up to now restricted to a few pilot projects, deserve further investment in this respect. Clarification of land use rights, improving the capacity of local communities to organize and of decentralized institutions to perform efficient service delivery is essential**.** Building voluntary partnerships and extending and adapting the FLEGT (forest law enforcement and governance) approach to domestic timber producers is also a priority.

For Central Africa[9] the priorities relate to the sub-region's principal ecosystem, the Congo Basin rainforest, but also to its substantial dry land forest ecosystems, large urban populations, substantial global carbon stocks in forests and vulnerable, forest-dependent communities, and challenges of a post-conflict environment for some countries. These priorities include:

- Support for sustainable wood energy production and management around the major cities;

- Enhancing value-chains, access to markets, and business development services for the domestic timber processing industry;

- Continued support for improvements in the management of forest concessions, including: citizen-based monitoring of social contracts and partnerships between concession companies, local enterprises, and communities; support for local participation in preparation of management plans; and continued development of traceability and certification mechanisms;

- Forest biodiversity conservation through improved protected area management but with innovative approaches, including working closely with local

[9] Cameroon, Central African Republic, Equatorial Guinea, Sao Tome et Principe, Gabon, Republic of Congo, Democratic Republic of Congo.

communities to ensure co-benefits, biodiversity offsets for large infrastructure, energy, and mining investments, and payments for environmental services. For Central Africa, managing energy, mining and infrastructure investments to benefit local communities and limit forest degradation is a particular challenge;

- More effective approaches to decentralized community forest management, with special measures to take into account the interests of indigenous and other forest-dependent people; and

- Taking advantage of the REDD+ agenda to improve forest resource management more broadly.

There is a need for continued monitoring and capacity building to support enhanced transparency of management of concession forests for social and economic benefits. There is scope for increasing the value-add in the export sector by improving the enabling environment for investment in further processing. Efforts such as the Voluntary Partnership Agreements (VPA) signed with the EU under the Forest Law Enforcement Governance and Trade (FLEGT) initiative need support in implementation and expansion of coverage to non-EU exports and domestic markets. These partnerships will also facilitate third party certification processes. In the heavily forested countries of Central Africa in particular, adequately funded, transparent, and accountable forest institutions are critical for both supporting sustainable concession forest management and ensuring that local communities benefit from and participate in forest management.

Forest biodiversity needs special protection in this region. The sub-region has great potential for mining and energy development, and great needs in improving transport and energy access. Attention to improving the policy environment in these sectors together with environmental impact assessments, implementation of environmental management plans and biodiversity offsets will also enhance sustainable forest management. The forest governance and law enforcement issues linked to infrastructure investments need to be addressed.

For Eastern Africa[10]

- For all countries, support for broad-based landscape restoration and watershed management in degraded areas using participatory approaches;

- Strengthening community based forest and woodland management approaches building on decentralized institutions and farmers' organizations;

- Delivery of appropriate support mechanisms for planting trees in production landscapes;

- Development of specific measures to support an enabling environment for private sector and small-holder plantation establishment and management;

- Development of a package of regulatory, incentive, and support measures for improved biomass energy production, transport and marketing especially in the vicinity of major cities; and

- Forest protection for nature conservation and nature-based tourism.

[10] Eritrea, Ethiopia, Kenya, Uganda, Tanzania, Burundi, Rwanda, Somalia, Seychelles.

For Southern Africa[11]

- Farmer managed agro-forestry and farm forestry in the production landscape using decentralized approaches, watershed management and protection especially in Malawi, Lesotho, and Madagascar;
- An enhanced enabling environment for small-holder and plantation forestry (Mozambique);
- Enhanced protected area management and eco-tourism development (Madagascar, Mozambique, Zambia, Botswana, Malawi);
- Coastal mangrove protection as part of broader coastal zone management programs (Mozambique and Madagascar); and,
- Forest management as part of investments in other sectors (mining, roads, energy) specifically in Mozambique, Malawi, and Zambia.

Implementation Mechanisms

Implementation will be through the CAS (Country Assistance Strategy) mechanism and country-driven. Partnerships and knowledge sharing will play a key role. Some important partners are mentioned below.

Partnerships and Knowledge Sharing

A number of Development Partners support forest programs in Africa. The African Development Bank is a key development partner in the forest and woodlands area. FAO is a key technical collaborator. The EU and a number of bilateral donors, including the governments of Germany, Norway, Sweden, L'Agence Française de Développement, UK, and the U.S. are key partners. Some of these partners have a particular focus on participatory land use planning, nature conservation, or citizen monitoring. A number of foundations are increasingly involved in the forest and natural resource management agenda. Information provided by the Development Assistance Committee (DAC) on OECD country programs of assistance to forestry in Africa highlights the support given to forest governance and capacity building.

The CGIAR (Consultative Group on International Agricultural Research) has a substantial body of knowledge and is scaling up research on African forests, trees, and agro-forestry through a new large-scale research program targeting livelihoods, landscapes, and governance.

Foundations such as the **World Resources Institute** also provide valuable support, such as in improving forest and environmental information systems and transparency. A number of conservation organizations provide valuable support for conservation, development and poverty reduction in forested ecosystems and some have led the way on community-based conservation initiatives.

[11] Madagascar, Comoros, Mauritius, Mozambique, South Africa, Malawi, Zambia, Zimbabwe, Angola, Botswana, Namibia, Lesotho, Swaziland.

Brazil is providing leadership on south-south learning, with regard to forest and deforestation monitoring.

The **Program on Forests (PROFOR**) is a multi-donor partnership that generates and shares innovative knowledge around the vision that well-managed forests contribute to poverty reduction, economic development, and a healthy global and local environment. It has supported a body of analytical work on forests and woodlands. Recent activities in Africa include the Forest Landscape Investment Forum in Kenya in May 2011 and support for Liberian chain-of-custody.

TerrAfrica, an AU/NEPAD platform for sustainable land management, has undertaken work on the costs of natural resource degradation. It has developed a major knowledge product on sustainable land management practices that have worked in Africa, including small-scale plantations, agro-forestry, and rainforest management practices.

Improving **REDD readiness** is a collaborative effort between several tropical forest countries and development partners, especially Norway, the UN organizations, and the multi-donor Forest Carbon Partnership Facility (FCPF) managed by the World Bank to build capacity to access future funding mechanisms intended to reward developing countries for reducing forest degradation and deforestation. The FCPF is supporting 14 African countries to improve REDD readiness and to access future climate finance. Readiness work includes analytics on the drivers of deforestation, carbon stocks, and sequestration potential; development of monitoring, reporting, and verification mechanisms (MRV); development of governance and institutional capacity to administer REDD and share its benefits equitably with stakeholders; and strategic environmental and social assessments.

Within the Bank, a number of knowledge platforms are under development, including the Ecosystems Accounting Platform and the Green Growth Platform, which may contribute to a greater understanding of the economic contribution of forests, woodlands, and trees to a green growth agenda in Africa.

The **FLEGT (Forest Law Enforcement Governance and Trade**) initiative spearheaded by the EU works through multi-stakeholder partnerships in wood-producing countries (e.g. Ghana, Cameroon, CAR, DRC, Republic of Congo and Liberia) to promote voluntary partnerships to ensure the legality of timber exported to Europe. Most of the Voluntary Partnership Agreements signed thus far between the EU and African producer countries also aim to ensure the legality of timber traded in domestic markets.

Sustainable **forest management certification** schemes like FSC (Forest Stewardship Council) and PEFC (Programme for the Endorsement of Forest Certification) work to ensure that forests are sustainably managed according to key social and environmental criteria. Several countries in Africa have made substantial progress in this regard.

There is also scope to use African mechanisms for regional and sub-regional cooperation, to enhance knowledge (as with COMIFAC which is developing common methodologies to assess carbon stocks and the drivers of deforestation), or to increase the effectiveness of investments (as with the Lake Victoria Basin Commission, where, through a regional operation the basin countries are investing in watershed management and protection). The African Union's CAADP (Comprehensive African Agricultural Development Program) includes a pillar on sustainable land and water management, and the AU is committed to incorporating climate considerations into natural resource development strategies.

Many of these partners play a strong role in the analytical work, knowledge sharing and piloting, providing a foundation for investments both in institution building and governance and in improved forests and woodland management and restoration.

Investments

Much investment support would be outside of traditional forest operations. Support for improved forest, tree, and woodland management would be through a range of different types of investments, including economic diversification, growth pole creation, employment skills, and value chain development operations with specific windows for forest-related activities; biomass energy production and transformation operations; decentralized community development operations with windows for agro-forestry and farm forestry; watershed management operations; environmental management components of infrastructure operations; public sector management operations; as well as some dedicated forests and natural resource management investments.

Support for improved forest, tree, and woodland management requires strong collaboration within the SDN network and across networks, specifically agriculture, energy, and infrastructure (Transport, Water, Information & Communication Technology or TWICT), as well as across networks, to FPD (Finance and private sector development), and PREM (poverty reduction and economic management) colleagues. A partnership for (agro-)forestry development between FPD and AFTEN would tap into the comparative advantages of each, especially given the overriding importance of employment creation and improving the business climate.

IFC supports investment and advisory services. The IFC forest strategy has three pillars: people (creation of jobs and opportunity); planet (focusing forest investments on degraded land and promoting recycling, efficiency, and waste reduction); and profit (implementing strong sustainability standards, promoting the Equator principles, increasing capacity and productivity). Its agri-business strategy supports sustainable production and processing along the value chain. Its current forest investment portfolio in Africa includes support for plantations in southern Africa and Tanzania, and to paper recycling in Nigeria.

Emerging **global programs managed by the World Bank provide funding for global public goods** and complement IDA and IBRD in many key areas—specifically the Climate Investment Funds (FIP, PPCR and SREP);[12] the Forest Carbon Partnership Facility (for REDD readiness); support from the Bio-Carbon Fund; as well as the Global Environment Facility (especially for land degradation and biodiversity conservation issues. FIP has the promotion of private sector investment as one of its explicit goals, but all other Bank funds and Bank-managed funds should also help to improve the climate for responsible private investment, be it by farmers, local communities, small and medium enterprises or large industries, and investors. This could be done directly, by lifting specific constraints to private investment, or indirectly by improving the functioning of forestry institutions.

Bringing together different sources of finance would be a priority. The main benefits and economic opportunities from improved forest and woodland management end up accruing with African citizens, and thus core development financing is necessary to realize development goals.

[12] Forest Investment Program, Pilot Program for Climate Resilience, Strategic Renewable Energy program

Staffing and Budget

Bank budgets are determined through the country programming and budget/regional exercise. Priorities outside the region set global public goods budgets for GEF and the Climate Investment Funds, though not for the BioCarbon fund or the Forest Carbon Partnership Facility. The global and local public goods agendas and budgets are closely linked however, since it is widely recognized that global programs need local ownership and will not succeed without bringing local benefits.

Given the overall budget constraints, this paper does not attempt to estimate budget requirements. However, it is important to keep in mind the priority this Action Plan attaches to multi-sectoral collaboration, and to meeting the forest agenda in many cases through operations that are led by other sectors, to which forest and natural resource management staff provide technical and strategic input and support.

Consistent with the Africa Strategy, staff decentralization will continue to be pursued in order to build country-based partnerships and to ensure that programs are embedded within country priorities. Given the multi-sectoral nature of the operations, many staff will have integrative skills as well as a strong background in natural resource management. Staff with multi-regional experience will be well placed to take advantage of global knowledge sharing and help build partnerships with other regions.

The Bank's Africa Region also intends to build hubs, with opportunities to staff those hubs with more specialized personnel. Skills in geographical information systems, technical aspects of forestry and forest and woodland management, agro-forestry, watershed management, land use planning, forest economics, as well as experience working with a range of stakeholders and practical problem solving will all be needed. Other units are likely to provide experience in areas such as private sector development, public expenditure and broader public sector management/governance, ICT, and land administration. Cross-support will also be sought from outside the region to continue to supplement Bank-funded staff with staff funded through cooperative arrangements with other development partners.

Conclusion

Forestry in Africa has often been viewed much too narrowly as either a source of export revenues from either industrial timber on the one hand, or on the other hand as an issue of global public goods. In reality, forests and woodlands play a much broader, two-fold role: *first,* as a diverse source of jobs and livelihoods for African economies and citizens, and, *second*, as a provider of ecosystem services —protecting watersheds and stream-flows, controlling erosion and enhancing fertility, regulating the climate, and protecting biodiversity. Export revenue and global public goods are important but a relatively small subsets of these broader roles.

Moving forward, an Action Plan consistent with the Africa Strategy needs to focus on forests and woodlands as a provider of household energy and as the source of employment from a vibrant, largely domestic but also export-oriented wood industry. The Action Plan should outline the importance of providing enabling environments for farmers to invest in trees as part of farmland restoration, and support forest-based eco-tourism;

address deforestation and forest degradation, which carry heavy economic costs and reverse the erosion and watershed degradation that result in crop failures and power outages; and take advantage of the opportunities for forests to contribute to the global public goods agendas, particularly in regards to climate change mitigation and biodiversity conservation.

Action Plan implementation requires the building of local institutions, information systems, and capacity for transparent governance at the decentralized as well as central levels by taking advantage of new opportunities provided by information and communications technology. All actors—local stakeholders and civil society as well as development partners and the private sector—will need to be taken into consideration in the planning and implementation of the Action Plan. The key is to work cross-sectorally to address country-specific development challenges. Better managed forests, tree, woodlands, and the products and services they support have great potential to contribute to the objectives of the Africa Strategy; potential that should be harnessed for the future of the continent.

Chapter I

Forests, Trees, and Woodlands in Africa: A Sub-Regional Approach to Challenges and Opportunities

I.1. Introduction

The purpose of this paper is to outline an approach for Bank engagement in forests and woodlands in the coming years. The paper takes the framework of the Africa Development Strategy[13] which has two main pillars: supporting employment and competitiveness, and building resilience and reducing vulnerability; and one underlying foundation: strengthening capacity and governance. It is also consistent with the framework of the Bank Corporate Forest Strategy (2002), which highlights the role of forests and woodlands in economic development, poverty reduction, and protection of global public goods.

Chapter 1 starts with an overview of forests and woodlands and their role in Africa. It then takes a sub-regional approach, summarizing the major challenges and opportunities in the Sahel, humid West Africa, Central Africa, Eastern and Southern Africa respectively. Chapter 2 presents a summary of relevant experience in improved forest and woodland management, using experience from outside the region as well as Africa, and from this summary outlines thematic areas for engagement. Chapter 3 highlights priorities for engagement, taking into account differences between sub-regions along with emerging local and global priorities[14].

The primary messages of this paper are linked. The first is that enhanced forest, tree, and woodland management can play a key role in achieving the goals of the Bank's Africa Strategy. The second is that in many countries the most effective approaches will be

[13] The Strategy, entitled "Africa's Future and the World Bank's Support for it" was published in March 2011 following an extensive consultation process.

[14] The paper is based on a number of sub-regional studies supported by PROFOR. These included engagement with a range of stakeholders in Africa. It also builds on recent experience with forest and NRM operations supported by the Bank and other development partners. Figures on forest and woodlands are FAO estimates based on "State of the World's Forests 2011." Data on forest and woodlands are very poor overall. The paper also builds on a range of analytical work from related sectors.

outside the traditional forestry institutions and will involve working cross-sectorally. There is also wide variation between sub-regions and countries on priority areas for engagement.

In the areas of employment and competitiveness, there is potential for scaling up the productivity and sustainability of the production, processing, and value chain in two key areas—fuelwood and charcoal, and the domestic timber industry. There is also scope in non-timber forest products and in eco-tourism. In the high forest areas there is scope for increasing the worth of domestic value added in timber products designated for export. There is also scope for more employment and enhanced competitiveness in value-chain development for timber and charcoal industries, in selected non-timber forest products, in biomass energy programs, and in eco-tourism development. There is also scope for enhancing sustainable production in agro-forestry and woodland management through broader decentralized community development approaches, and in plantation management and establishment focusing on smallholders.

In terms of resilience and vulnerability, trees, forests and woodlands play a key role in the protection of productive assets including soil fertility in agricultural landscapes, protecting watersheds, controlling erosion and building resilience in the face of climate-related impacts of droughts, floods and coastal erosion. Trees and forests also mitigate the impacts of climate change through sequestering carbon: there is thus a "double-win" from investing in trees. Much of Africa's biodiversity is found in forests. New financing mechanisms which take account of the "global public goods value" of forests such as REDD (reduced emissions from deforestation and forest degradation) have potential, and GEF (Global Environment Facility) funds can also help support biodiversity conservation if combined with development financing. However, African citizens accrue the main benefits and economic opportunities from improved forest and woodland management.[15]

Improving governance and capacity is essential to achieving the goals of the two core pillars of the Africa Strategy, but requires broad-based investments and support outside as well as within the sector, specifically in decentralized government and transparent decision-making processes including budget management, development planning, and information management and monitoring, along with participatory decision making and citizen accountability mechanisms. Information and communication technology, within a broader e-government transformation, offers great opportunities. Also needed is a greater focus on knowledge and research, as well as technical capacity in building the services that citizens require to manage trees and forests well. Other elements include the business environment, and transport and trade facilitation and governance processes. Forest organizations need to move away from a purely regulatory stance in order to enhance their role as "service providers" to citizens and to work closely with other organizations and civil society.

Africa's forested area is estimated at 675 million hectares, about 17 percent of global forest area and 23 percent of the land area in the region.[16] Five countries: DR Congo, Sudan, Angola, Zambia, and Mozambique, account for over half of forested area. These figures

[15] The 2002 World Bank Forestry Strategy was completed following a comprehensive consultation process, included three pillars which have formed the basis for tracking lending to forests: (a) harnessing the potential of forests to reduce poverty; (b) economic development (sub-divided into two codes, one related to improved forest governance and the second to resources management; and (c) enhancement of global public goods (e.g. biodiversity and more recently climate change). Lending to forests, as well as to broader natural resource management, is tracked in the agriculture and rural development coding system.

[16] FAO Global Forest Resource Assessment 2011

do not include trees outside forests (for example, on agricultural land) although these are of considerable importance especially in more densely populated areas including Western Kenya, parts of semi-arid and sub-humid West Africa, and parts of Uganda, Ethiopia, and Madagascar. Landscapes defined as "other wooded land" cover an additional 350 million hectares, bringing the total of forested and wooded landscapes to 36 percent of land area in Africa.

I.2. Contribution of Forests, Trees, and Woodlands to Employment and Resilience

Forests, trees, and woodlands, as part of the natural environment, provide core "services" to citizens,[17] including direct production services, and underlying regulating and supporting services. "Provisioning" services include timber for building, fuel wood and charcoal, fodder, fruit, nuts, medicinal plants, and other non-timber forest products. Through these products and "flow of services," well managed forest and woodlands contribute directly to jobs and competitiveness, as well as to hungry season food, and back-up cash income in times of need. Regulating and supporting services include watershed protection, replenishment of soil fertility, resilience to climate variability and change, carbon sequestration, pollination, support for the basic carbon and nutrient cycles, as well as ecosystem and biodiversity conservation. These services play a key role in mitigating risk and increasing resilience. Cultural services include spiritual values and recreation. Forests, trees, and woodlands can also provide jobs (e.g. through ecotourism).

Most forests and woodlands provide more than one type of service and the quality of these services, moreover, is inter-linked. Trees in agricultural production landscapes provide production services (poles and fuel wood), regulating services (erosion control), supporting services (for bees which pollinate crops), and cultural services (shade for rest and recreation).

I.2.1. Contribution to Employment and Economic Development

The contribution of forests, woodlands and trees to national economies is insufficiently reflected in GDP figures for a number of reasons:

1. *Informality is widespread in the sector.* GDP figures largely reflect the export sector on the one hand, and production from plantations on the other. Globally it has been estimated that informal forest enterprises employ up to 10 times the number of people in the formal industry. Furthermore the value created by woodlands and forests may be reflected in other sectors, such as energy and the raising of livestock.

2. *GDP figures in Africa do not generally reflect the value of timber and non-timber products that are consumed by households.* This is in contrast to the cropped agriculture sector where production consumed by households is accounted for.

[17] The UN Millennium ecosystem assessment 2000 described these as "provisioning", "regulating", "supporting" and "cultural" services. See also "Ecosystem Valuation and Wealth Accounting: concept for a Global Partnership" World Bank December 2010

3. *Much of the value of the ecosystems services that forests and woodlands provide is reflected in other sectors or is not reflected in current national accounting systems*. (This issue is discussed in more detail in Section I.2.2).

I.2.2. Wood Energy

Fuel-wood and charcoal account for 90 percent of wood removals in Africa or 615 million m^3 annually and constitute the most important "provisioning service;" but the sector's economic contribution is not reflected in GDP figures. Country-specific studies illustrate its importance; a recent study on Tanzania estimated the annual value of the charcoal business to be US$650 million, creating two million jobs, with production at one million tons.[18] A study for Rwanda estimated value-added of fuel-wood and charcoal at five percent of GDP. In contrast, the official contribution of forests and woodlands to GDP is 1.9 percent in Tanzania and 1.3 percent in Rwanda.

Eighty-two percent of African households rely on fuel-wood or charcoal for cooking and heating, and the demand for fuel-wood and charcoal is projected to increase by 20 percent between 2010 and 2030. While much fuel-wood in rural areas is locally collected and used, charcoal is the fuel of choice in most urban areas because of its flexibility and the ease with which it can be transported.

Therefore, the production, transport, and sale of charcoal play an important role in generating jobs and incomes. Sustainable wood fuel production would form a key element in broader sustainable forest management (maintaining the "regulating" function of forests and woodlands). There is great potential for reducing waste and improving household health from respiratory diseases, particularly among women and children, by encouraging increased use of improved cook-stoves.[19]

I.2.3. Timber for Industry and Construction

Industrial timber production is the second "provisioning service" but the figures on industrial timber production often reflect the formal export sector, while the main source of timber removals, jobs, and economic activity lies in the domestic sector. Timber for construction, furniture, poles and a variety of other purposes constitute the second major "provisioning service." In Ghana, for example, formal sector employment in the forest sector is 50,000 (mostly in the highly regulated export sub-sector), compared with informal employment estimated at 260,000 (mostly for domestic and regional markets). Total industrial timber removals in Africa are estimated at 72 million m^3 annually, or 4.2 percent of the global total of 1.7 billion m^3. Only five percent of the African removals is exported, accounting for a mere three percent of global timber trade and 10 percent of tropical timber trade. Industrial timber production from Gabon (a heavily forested country) for example, is 3.4 million m^3 annually from 22 million ha, while in Czech Republic it is 16.7 million m^3 from 2.7 million ha.

Another example is from one segment of informal forest industry: chainsaw milling. It has been estimated that in Cameroon this industry employs 45,000 people (three times

[18] Data are poor because of the high degree of informality in the sector. The Biomass Energy Strategy for Rwanda (2009) estimates value-added from charcoal and fuel-wood to be equivalent to five percent of GDP, and a similar strategy for Malawi estimates the value added of the traded sub-sector at US$105 million, but that traded volume is only 10 percent of total consumption. A UNEP study (2000) estimates that the charcoal industry in Kenya generates two million jobs. See also "Charcoal in Africa: Importance, Issues and Possible Solutions." GTZ. 2008.

[19] "Wood-based Biomass Energy Development for Sub-Saharan Africa: Issues and Approaches.", World Bank Africa Energy Division and ENV. February 2011.

the industrial timber sector) and stumpage revenue lost annually is $13 million. In Ghana, the figures are 97,000 people and $18 million, and in Liberia 1,500–3,900 people and $18–48 million, respectively. Despite the informal nature of the industry, it is highly organized and the value chains can be exploitative leaving little benefit to local communities.

Much of the global dialogue on tropical timber has focused on the portion that is internationally traded; there has been good progress in tracking its legality and traceability, and increasing the portion that comes from sustainably managed forests. This segment contributes to formal sector employment and export revenues, but in many countries its contribution to jobs is outweighed by the domestic timber industry, much of which is informal and not sufficiently reflected in national accounts. A dual industry structure has emerged.

Demand for timber products is expected to grow rapidly, as urbanization and incomes in Africa increase. There is great potential for increasing value added and sustainability in the local timber industry; demand for construction material will increase as incomes grow, together with demand for better quality housing. Plantation forests now account for 40 percent of industrial timber produced globally but less than four percent of forest area.[20] Except in Southern Africa such plantation forests do not at present play a significant role in Africa.[21] Growing conditions are good for plantations in many parts of the continent, and with improvements in the private sector investment environment and clarity of land rights this is likely to be a growth sector, especially in "forest-scarce" countries. However, there are also challenges regarding access to finance.

Forest based businesses come in different sizes and shapes. Often rural small, micro, and medium enterprises (SMMEs) provide substantial direct employment. At the same time, they may have constraints caused by the owners' business skills, and a lack of access to financing and markets. Larger companies have better access to the latest technology, international markets, and are not limited to local, often thin financial markets. The most appropriate strategies for business development depend on natural and socioeconomic conditions. However, in the past there may have been a bias favoring large-scale operators and concessions, and the earlier work on certification and FLEGT may have re-enforced duality in the sector. Outgrower schemes are being used successfully in some countries though still at a limited scale.

The poor business climate often encourages firms to stay informal. While the forest sector can promote formality within the sector, many impediments need to be resolved at national and cross-sectoral level.

I.2.4. Non-timber Forest Products

Non-timber forest and tree crops, which are highly diverse regionally, for both domestic and export consumption, are the third provisioning service. Tree-crops in agricultural landscapes include fruit, cocoa, oil palm, and rubber. Bamboo is of growing importance in some countries. Non-timber forest products (NTFP) include specialized products such as gum arabic and shea-nut (in Burkina Faso this is the second source of export revenues

[20] According to one estimate, total plantation area worldwide is estimated at about 145 million ha, of which about half is grown as industrial plantations and half are grown for watershed protection purposes. (International Society of Tropical Foresters.) The Americas account for the greatest area of industrial plantations.

[21] Total plantation area in Africa is estimated at three million hectares of which over half is in South Africa. "Opportunities for Private Sector Investment in Plantations 2005." ARD Sustainable Development Anchor. World Bank 2005.

after cotton), as well as fodder for livestock, bark, medicinal products, fruit, and honey. Non-timber forest products have been progressively replaced by synthetics and plantation-grown substitutes over the past 50 years in international markets, but the recently renewed interest of many developed-country companies in sourcing a variety of sustainably produced NTFP, especially in the personal care and food industries, has opened up new opportunities for market development and sustainable rural income generation in Africa. IDA can help build the capacity of farmer's organizations and SME associations can assist with links to these new marketing opportunities.

NTFP also include bush-meat and insects, an important source of protein in some areas, widely consumed locally but also traded in Central and humid West Africa. In Gabon, heavily forested with low rural population densities, about 30,000 tons of bush-meat is caught annually (over 20 kg per capita) whereas in more densely populated areas (Nigeria, parts of Cameroon) most bush-meat has been hunted out.

The value of non-timber forest products, which are major source of food, fodder and cash incomes in some areas, is not accurately reflected in national accounts. According to official figures, the value of non-timber forest products is US$0.5 billion for Africa compared with US$8 billion for Europe, where they are of minor economic importance but accurately reflected in official figures.[22] These products also provide an important "safety net" of food for poor rural communities. One extremely valuable non-timber forest product that is widely traded is bush-meat: the meat of wild animals that is harvested by hunting and trapping. The animal protein provided by bush-meat is essential especially in the moist forests of West and Central Africa, where stock-raising is difficult due to the disease environment.

Because forests and woodlands provide a mix of direct and indirect economic **services, across sectors, there are public policy challenges in providing the right mix of incentive and regulatory instruments for sustainable management.** Governance challenges are often cross-sectoral. Aligning policies and capacity is also a major challenge**.**

I.2.5. Contribution to Resilience and Reduced Vulnerability

Forest and woodlands provide ecosystem services whose value is reflected in other sectors or not reflected in current price and valuation systems. This stock of services that standing forests and woodlands provide is often not reflected in national accounts, which generally place value only the direct production. While standing forests may not have a value in national accounts, for example, if they are converted to agricultural land-use, the value of crop production will be reflected. Work is ongoing on selected OECD and developing countries to pilot incorporation of natural capital into national accounting systems through the global partnership for WAVES (Wealth Accounting and Valuation of Ecosystem Services), but this will take several years to accomplish.[23]

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[22] For example, according to TRAFFIC, the unregulated bush-meat trade in the Central African Republic is worth an estimated US$72 million per year. Extrapolating this figure to the whole of the Congo Basin would make the bush-meat trade worth about US$1.5 billion annually in that sub-region alone.

[23] The World Bank, in its draft communication to Rio + 20, has called for agreement to incorporate WAVES in national accounting systems by 2030. Earlier pilot work on this topic focused on depletion of natural capital (especially non-renewable natural capital), and creation of human and physical capital. The newer work will also aim to address restoration of renewable natural. Countries to be included in the pilot phase are still under discussion but are likely to include Colombia, the Philippines, Botswana, and Madagascar. A challenge is that in those countries where basic "traditional" national accounting systems are still not fully developed, it is also challenging to incorporate WAVES approaches.

I.2.6. Watershed, Soil Fertility, and Landscape Management

Sound watershed and landscape management increases the resilience of productive landscapes to external shocks, particularly floods and droughts, and helps populations manage weather-related risks. Natural forests in hilly areas constitute the "water towers" of the major African rivers, and forested landscapes more broadly protect hillsides and agricultural areas downstream from erosion and loss of fertility. Trees alongside rivers also help to stem erosion and protect streambeds from siltation. Coastal mangrove forests also protect coastlines from erosion and storm surges; this is particularly important in parts of Madagascar and Mozambique and West Africa where rapid population growth along coastal areas combined with poor land use planning has eroded these natural coastal protection means. Yet this "cross-sectoral and spatial" value is still only beginning to be recognized in Africa. Analysis using established methodologies has estimated the cost to GDP of natural resource degradation at six percent of GDP in Ghana and 8–10 percent in Nigeria. Analyses of this kind can help to assess the cost of "not engaging" in improved forest and woodland management in Africa, but have been undertaken less frequently than in some other regions.

Forests and trees in agricultural production landscapes enhance soil fertility and agricultural productivity. Farmer managed forest regeneration programs in Niger, for example, are estimated to have led to a doubling of agricultural yields over nearly five million hectares. Ongoing research is highlighting the potential benefits of large-scale landscape restoration (re-greening) in Africa. It is estimated that further forest regeneration of five million ha, for example, could yield the equivalent of US$500 million in nitrogen fertilization, US$1–1.5 billion from increased maize yields (5–10 million tons) and 30–50 million tons of carbon sequestered. It should be emphasized that in order to be sustainable such programs need to be based on community or individual initiatives focused on restoration through regeneration rather than "top-down" tree planting campaigns. In more densely populated areas of countries such as Kenya and Rwanda there are policies to encourage tree planting in agricultural landscapes—Rwanda has managed to reverse deforestation and the landscape restoration program is already yielding results in terms of increased agricultural productivity.[24] Trees and woodlands also play a key role in enhancing household resilience and act as a "social safety net" in times of drought and, where tenure rights are secure, may act as a source of capital to be realized for particular expenditures.

I.2.7. Climate Regulation

Forests and woodlands store and sequester carbon so play a key role in climate change mitigation. Deforestation and forest degradation lead to emissions of CO_2 into the atmosphere and contribute to global warming. On a global basis, deforestation, related land-use change, and agriculture account for 30 percent of green-house gas emissions. Africa accounts for 23 percent of the global total of carbon stored in forest biomass, more than half of it in the Congo basin rainforests. While Africa accounts for only four percent of global greenhouse gas (GHG) emissions, two-thirds of these come from deforestation, forest degradation, and land-use change. By contrast, in most OECD countries and now China forests are net sequesters of carbon; Chinese decision-makers have recognized the link between forest landscape restoration and broader landscape resilience, and

[24] There are many case studies that demonstrate the impacts of improved landscape and broader forest and woodland management, and studies on the costs of natural resource degradation, but impact evaluation approaches have generally been more systematic in the Latin America and East Asia regions than in Africa.

have put in place policies to support watershed and broader forest restoration. If Africa is able to use its substantial land resources to become a "net sequester" of carbon from land-use, this could potentially make a substantial difference to the global climate. Landscape restoration and improved agricultural practices can achieve the "triple win" of improved productivity, enhanced resilience, and reduced emissions.

Africa itself also stands to benefit in the long term from reversing forest degradation, but because of the global public good dimensions involved, new climate-related financing instruments are being developed that could help African and other developing countries overcome the upfront costs. These include REDD+ financing (Reduced emissions from deforestation and forest degradation, including mitigation measures from conservation, sustainable management of forests, and the enhancement of forest carbon stocks), pilot carbon finance instruments, and the climate investment funds. To date there have been useful pilots and preparatory work, but it is taking time to benefit "to scale" from these new instruments.

I.2.8. Biodiversity and Cultural Values

Africa's forests are rich in biodiversity, the basis for the environmental services on which life depends.[25] Madagascar, DRC and other central African rainforest countries, the Zambian miombo forests, the Tanzanian Eastern Arc Mountains, the West African forest landscapes and central African montane forests are all regarded as "biodiversity hotspots."[26] DRC ranks fifth in the world globally for plant and animal biodiversity. The area of forest designated primarily for the protection of biodiversity in Africa is currently 55 million ha, nearly nine percent of total forested area.

Protected ecosystems can help create jobs from tourism and related services. There are 17,000 annual tourists visits to the mountain gorillas of Rwanda's Volcano National Park, part of the 447 km^2 Virunga conservation area, a trans-boundary park including DRC and Uganda, and tourism now provides directly 33,000 jobs in Rwanda. (Protected areas in Europe, the U.S. and a few middle-income countries also form the basis of thriving tourist industries). Nature-based tourism is the second largest foreign exchange earner in Zambia.

Most protected areas, however, face big challenges in "paying their way" directly. Only a few protected area habitats have species of "iconic" interest (these are mostly large mammals rather than plants), and funding from the global community has been insufficient. IDA and GEF funding could potentially leverage additional financial resources for biodiversity conservation funding, and test at scale new opportunities for long-term sustainable funding of forest biodiversity conservation used in some other regions, such as payment for environmental services, biodiversity offsets, and conservation trust funds.

There have been challenges, too, in balancing pure conservation objectives with the need to secure livelihoods of local populations, especially as many forests provide a mix of services. In addition to their "regulating function" coastal mangrove forests provide the spawning ground and shelter for young ocean-going fish.

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[25] As defined in the proposed U.S. Congressional Biodiversity Act, HR1268 (1990), "biological diversity means the full range of variety and variability within and among living organisms and the ecological complexes in which they occur, and encompasses ecosystem or community diversity, species diversity, and genetic diversity

[26] Other biodiversity hotspots that contain forests and woodlands include the Coastal Forests of Eastern Africa, the Horn of Africa (which includes montane forests), and the Cape Floristic Region.

I.2.9. Cultural Values

Forests, including particular tree species, hold particular cultural values for local people, who need to participate in and benefit from forest and woodland services and management regimes. These values are especially important for groups dependent on the forests (e.g. the pygmies of Central Africa) but also for other communities. Values are highly context-specific, and management planning needs to recognize and incorporate these.

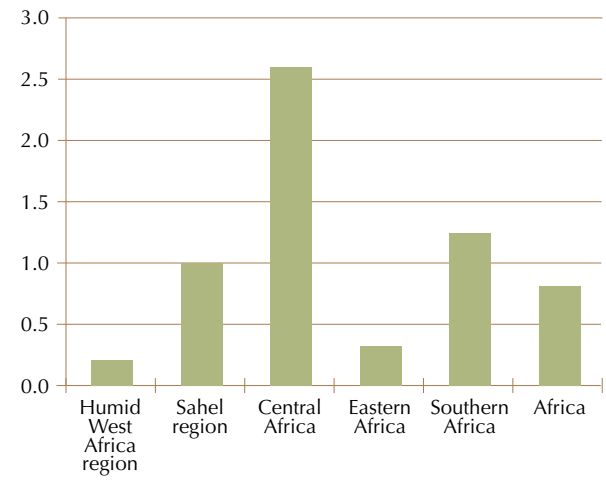
I.3. Overview of African Forests

I.3.1. Forest Area

Africa as a continent is not forest-rich. With an average of 0.81 ha of forest area per person, it has a much greater forest cover per person than Asia, but less than Latin America, which has 2.1 ha per person, or than Europe or North America (see Charts 1 and 2).

There are very wide variations within Africa. Humid West Africa, with high population densities in Nigeria and Ghana, is the most "forest poor" sub-region, while Central Africa and Southern Africa both are relatively "forest-rich." A few countries with very large forest areas (Canada for North America, Brazil for South America, Russia for Europe, and DRC for Africa) shape the figures in all regions of the world.

Chart 1. Forest Area per Person in Africa

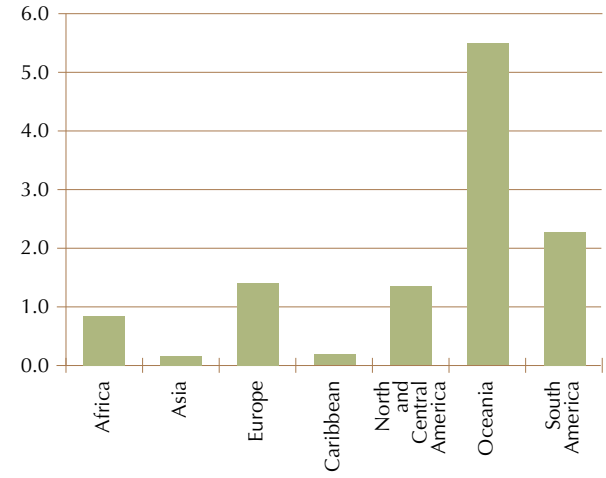


Source: Global Forest Resources Assessment 2010.

I.3.2. Deforestation

Reversing deforestation by 2015 is one of the Millennium Development Goals.[27] While deforestation has slowed globally, and has even been reversed over parts of Asia, annual forest loss in Africa averaged over three million hectares per year in the 2000–2010 period, with the greatest percentage losses in humid West Africa.[28] The main causes of deforestation are increases in the area planted for subsistence agriculture to meet food security needs,[29] and increasing demands for wood energy. Displacement of farming populations by armed conflict has led to significant deforestation in countries such as DRC and Cote d'Ivoire. Conflict and the insecurity it causes have also played a role in providing a disincentive to investment in more intensive farming, resulting in more forest clearing. Nonetheless deforestation rates have slowed over much of Africa compared to the 1990–2000 period.

Chart 2. Forest Area per Person in All Regions



Source: Global Forest Resources Assessment 2010.

[27] MDG 7 on the environment has a number of indicators, including access to water and sanitation, reversing deforestation, increasing the area of biologically significant ecosystems under protection, and improving the conditions of people living in slums.

[28] At the continental level the rate was about one percent per year, less than Central America and similar to Latin America. Section 1.4 provides information on deforestation by country.

[29] In the moist African tropics, logging roads have often provided shifting cultivators with access to fresh forest soils.

Some analysts believe that forests follow a "natural progression" of conversion to farmland, degradation, and restoration of a mosaic agricultural/forest landscape.[30] However while this has broadly been the pattern in Europe, in other regions the experience has been more varied. The most densely populated, 'forest-poor" countries (such as Vietnam and China) have succeeded in reversing deforestation, while in "forest-rich" Latin American countries, despite higher per capita GDP, this has not yet happened.

Africa has a much higher rate of population growth compared to other regions, as well as a much higher rate of increase in agricultural land area. Farmers in other regions have had the means to switch from area expansion to increasing productivity on existing farmland. Nevertheless the experience varies by sub-region. Land and forest-poor sub-regions such as the Sahel have managed to attain slower deforestation rates than land and forest-rich regions such as Southern Africa. Deforestation was also mapped against a number of other indicators, including the business environment indicator, the property rights indicator and the environment CPIA (Country performance and institutional assessment) indicator. No clear relationship was found.[31]

Global data also classify forests by the percentage of planted forests. While these are over 20 percent of forest area in Asia they are less than three percent of forest area in Africa. This is because of the overall investment environment, which in most countries is not favorable to long-term investment, and also because of land tenure concerns. These issues are discussed in more detail in Chapter II.5. A smaller proportion of African forests is managed for watershed protection than in other regions. In many countries forests and woodlands form an integral part of the landscape. In the Congo basin areas managed for protection or conservation may form part of larger scale forest management plans.

[30] CGIAR (Consultative Group on Agricultural Research) "Program Proposal 6: Forests, Trees and Agro-Forestry." February 2011.

[31] Ghana, for example, has one of the best CPIAs in the region but one of the most rapid deforestation rates; Congo Republic one of the worst but very little deforestation. Underlying causes lie with other factors, including population pressure, agricultural land pressure, and the land tenure system.

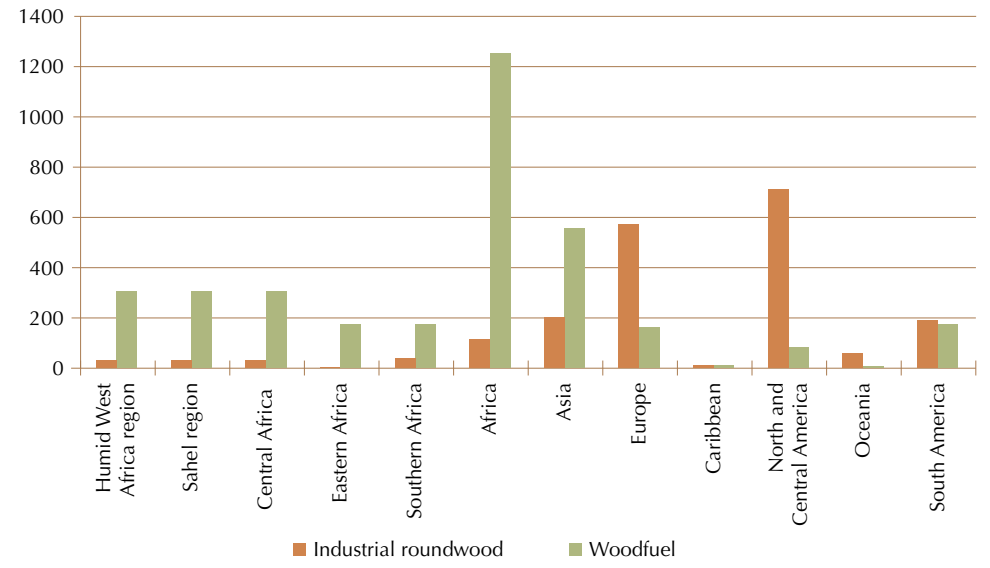
But protection and conservation forests have an important role to play in larger scale watershed management and biodiversity conservation.[32]

The challenge for Africa is that in many countries areas may have been designated for conservation, but without sufficient resources adequately to manage them or to ensure that local people participate in benefit sharing and management. There is no very clear relationship either between the percentages of area designated for conservation on the one hand, and overall deforestation rates on the other. In Ethiopia, for example, 18 percent of land area is designated as a terrestrial protected area while the annual deforestation rates is about one percent; in Kenya the figures are 11.6 percent and 0.33 percent. In contrast Rwanda has succeeded in reversing deforestation, with 10 percent of land area protected, while in Burundi and Uganda the percentages are 1.4 percent and 2.55 percent annually for deforestation and 4.8 and 9.7 percent for protected areas. The quality of management of existing protected areas, forests, and woodlands, along with the overall landscape management for all types of land, including agricultural land, are more important determinants of the quality of biodiversity conservation as well as control of overall land degradation.

I.3.3. Timber Harvesting

Chart 3 illustrates the pattern of wood removals in Africa compared with other regions. It illustrates the predominant role of fuel wood for African countries. It illustrates also that Africa accounts for a very small proportion of round-wood harvesting. Removals are by far the lowest of any region. Harvesting averages about 70 million m^3 annually, compared with nearly 600 million m^3 for Europe and over 700 million m^3 for North America. Much of the timber harvested in Africa comes from managed natural forests. Demand for timber products will increase as incomes rise in Africa, and there is scope for increases in wood harvesting, with the right incentives for increased investment in plantations, and sustainable management of natural forests.

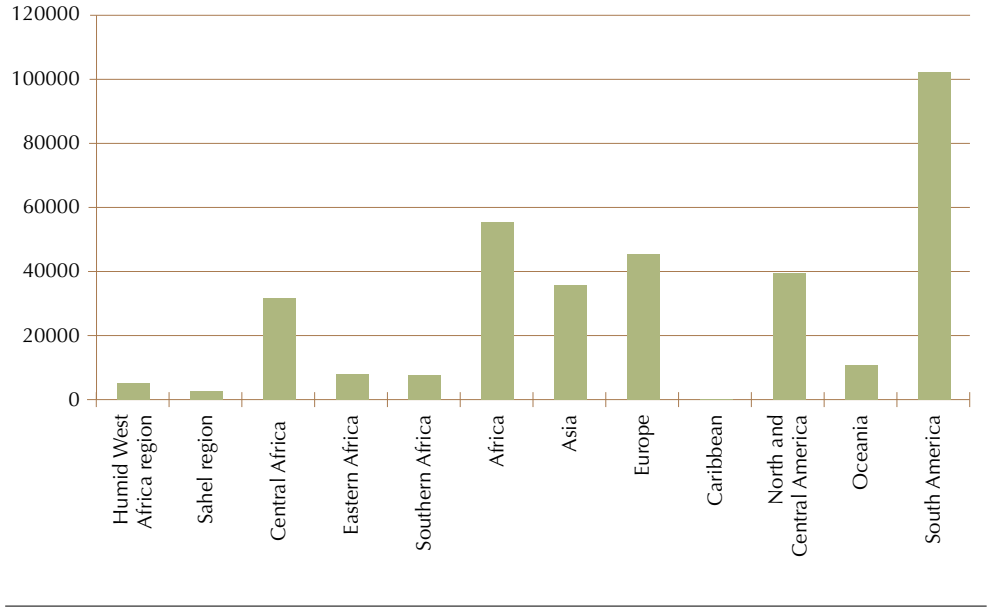
Chart 3. Wood Removals 2005



Source: Global Forest Resources Assessment 2010.

[32] A biodiversity strategy for the region is under preparation.

Chart 4. Carbon Stock in Forest Biomass in 2010 by World Regions



Source: Global Forest Resources Assessment 2010.

I.3.4. Climate Change and Forests

Africa accounts for about 23 percent of the global carbon stock in forest biomass, or 55 billion tons out of a global total of 290 billion tons. Central and West African forests are richer in biomass than those of the Sahel or eastern and southern Africa. Nevertheless because of their size, the eastern miombo forests (240 million ha, or twice that of the Congo basin rain-forests) and the Sahelian dry forests also store substantial quantities of carbon. African forests have the potential to be a substantial carbon sink.[33]

African forests and landscapes, however, are under pressure, and account for a substantial proportion of global GHG emissions from land-use change, agriculture, deforestation, and forest degradation (see Chart 5). Since these factors together account for 30 percent of GHG, African forests, if well managed, have potentially a contribution to make to global climate mitigation. Forest restoration furthermore can have co-benefits for resilience and livelihoods.

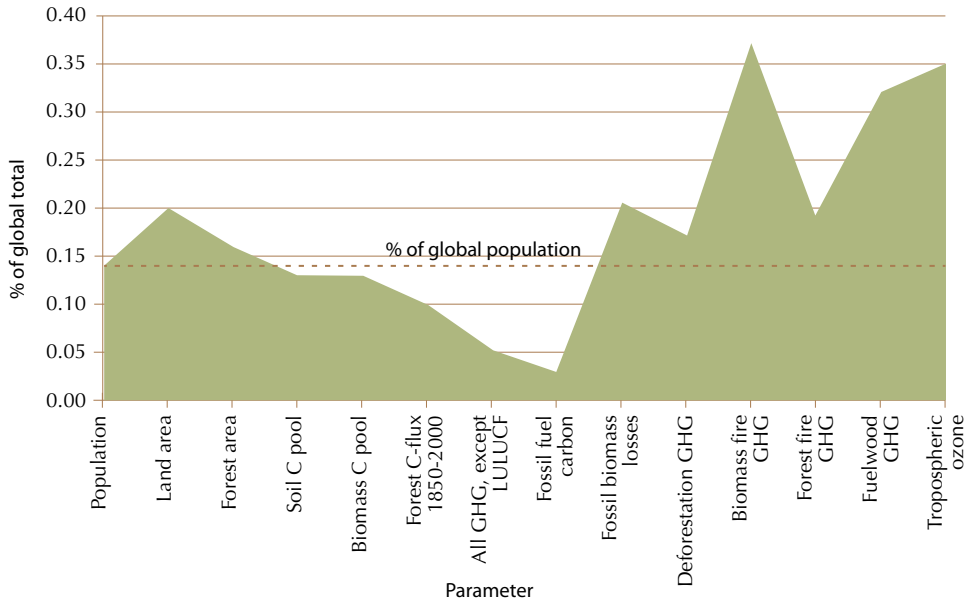
The chart illustrates the role that fire plays in African GHG emissions, both seasonal burning of agricultural lands, and burning of forests as part of subsistence agricultural systems. With agriculture being the major proximate cause of deforestation, agricultural and forest/wooded landscapes need to be considered together when considering sustainable land management regimes.

Analytical work undertaken in a range of African countries has illustrated the cost to GDP of natural resource degradation broadly and forest degradation and deforestation in particular. The cost to Ghana of natural resource degradation, for example, was estimated at six percent of GDP.[34]

[33] Congo Basin old growth forests are already a sink, as they continue to store an average of over 0.6 tons of CO2 per hectare per year.. 2009 letter to *Nature* by Simon Lewis et al. on http://www.nature.com/nature/journal/v457/n7232/abs/nature07771.html

[34] "Costs of Environmental Degradation in Ghana." Africa ESSD. World Bank 2007. Established methodologies used for this assess the cost of natural capital depletion as well as the value of other types of capital accumulation (e.g. from education) to adjust GDP estimates and arrive at "genuine savings estimates."

Chart 5. Africa's Contribution to Global Warming from Land-use Change, Agriculture, Deforestation, and Forest Degradation



Source: PROFOR, Climate Change Thematic Paper 2010. The decimal points refer to percentages.

I.4. African Forests and Woodlands by Sub-Region: Challenges and Opportunities

I.4.1. The Sahel[35]

Forests and woodlands cover about 14 percent of land area in the Sahelian countries, but tree cover is sparse for much of this area. Woodlands nevertheless play a key role in conserving soil fertility on farmland—they provide fodder for livestock and account for 80 percent or more of household energy needs. They are core to risk management and resilience for local populations.[36]

Despite the pressure on resources, deforestation rates in the Sahel (about 0.8 percent per annum) are lower than in most of the other sub-regions. There are a number of historical reasons for the lower rate. Following the droughts and famines of the 1970s and early 1980s there was recognition that forest degradation and land/soil fertility degradation were inter-dependent. Several of the countries moved to align forest and woodland policy with ongoing decentralization strategies. Local communities were given the rights to harvest trees, and programs were put in place to **support farmer-managed forest regeneration as part of broader food security, agro-forestry and sustainable land management approaches**. These regeneration programs have also contributed to a "re-greening of the Sahel" observed through satellite imagery in some countries.

[35] The Sahel includes Cape Verde, Senegal, Gambia, Mauritania, Mali, Burkina, Niger, Chad, and Sudan. The data in Table 1 for Sudan are for South Sudan and Sudan combined, since they are based on the FAO Forest Resource Assessment of 2011, which was published before South Sudan gained independence in July 2011.

[36] "Regibak Study of the Forest Sector Sub-Saharan Africa: Present Situation and Past Experience in the Tropical Dry Forests North of the Equator." Michel Malagnoux, 2009. PROFOR study.

Table 1. Forests and Woodlands in the Sahel

Countries/ area	Population (millions)	Land Area (sq. km)	Forest Area % of Land Area (%)	Forest Area Per Person	Deforestation Rate (annually 2000–2010) (%)
Burkina Faso	16.3	273,600	21	0.37	–0.96
Cape Verde	0.5	4,030	21	0.17	0.37
Chad	11.5	1,259,200	9	1.06	–0.64
Gambia	1.8	10,000	48	0.29	0.41
Mali	13.3	1,220,190	10	0.98	–0.60
Mauritania	3.4	1,030,700	0	0.08	–2.37
Niger	15.9	1,266,700	1	0.08	–0.93
Senegal	12.9	192,530	44	0.69	–0.48
Sudan	43.2	2,376,000	29	1.69	–0.08
Sahel region	**118.7**	**7,632,950**	**14**	**0.98**	**–0.29**

Several countries also supported community wood-fuel plantations and reforms in the fuel-wood and charcoal market (see also Chapter II.2.1 on the experience of Senegal). Challenges of low capacity and financial constraints on the implementation of these programs to scale remain, but in large part the policies and technologies are in place. Sahelian countries have made widespread use of indigenous trees in regeneration programs that have also enhanced sustainability. The Sahelian countries have also been able to effectively use Global Environment Facility grant funding for investments in sustainable land management under the GEF supported TerrAfrica program.[37]

Climate change models predict rising temperatures and increased incidence of extreme weather events for the Sahel countries. Woodland re-generation plays a key role in enhancing the resilience of production systems and landscapes in the face of these pressures.[38] **There is great opportunity to take advantage of and scale up these regeneration programs further.**

There is also scope to take advantage of the opportunities for cash income offered from non-timber forest products in the Sahel. The most well-known of these is gum arabic harvested from the *Acacia senegal* tree, grown by about six million small-holders in central and western Sudan and inter-planted with annual crops (an agro-forestry system). Sudan is the principal producer, but production was halved and exports

[37] A follow-up to this program designed specifically for the Sahel region, the "West Africa Sahel Program in Support of the Great Green Wall," is under preparation and would include over US$100 million of investment funding. TerrAfrica supported an African Union/NEPAD-led knowledge platform on sustainable land management, as well as US$150 million of investments in sustainable land management in Africa, much of it co-financing larger operations with other development partners.

[38] Mali and Niger have both participated in pilot Bio-Carbon Fund reforestation programs and Burkina has been selected as a pilot country in the Forest Investment Program, one of the programs under the Climate Investment Funds, established to catalyze policies and measures to facilitate reduction of deforestation and forest degradation, leading to emissions reductions and protection of forest carbon stocks.

were reduced from 80 percent to 50 percent of world markets in the decade after a government marketing monopoly was introduced. The prices received by farmers declined as a proportion of the export price and were insufficient to provide an incentive for them to maintain their plantings. Plantation degradation in turn has affected soil fertility. Government is now moving to open the market.[39] Sudan has also embarked on a major reforestation program, and as noted in Chart 2 above has one of the lowest deforestation rates in Africa.

Chad is also an important gum arabic producer. Shea-nut butter in Burkina Faso (used in cosmetics) and mangoes in Mali are other examples. **Programs already generate jobs but need to be combined with private enterprise development and value chain support programs for enhanced effectiveness** and to ensure small-scale producers can organize themselves sufficiently to receive an equitable share of the benefits.

South Sudan, which became independent in July 2011, is facing particular challenges.[40] Forests and natural woodlands are estimated to cover about 29 percent of land area, or 192,000 km^2, of which about 10 percent is classified as forest reserve; there are also an estimated 17,000 ha of plantations. The long period of conflict may have helped to conserve these resources, though information is un-reliable. Forests and woodlands are key to local livelihoods but there is also scope for re-establishment of a sustainably managed timber industry to serve regional as well as national markets. A recent report[41] focused on underlying governance and capacity building needs in the sector: legal frameworks, re-structuring the forest organization, forest information, management and land use planning, participatory forest and woodland management, market based instruments for regulation of the timber sector, and sector financing.

I.4.2. Humid West Africa

Humid West Africa includes sparsely populated, highly forested countries (Liberia) and densely populated, forest-poor countries (Ghana, Togo, and Nigeria). The sub-region is highly diverse with very specific opportunities and challenges.

Ghana and Nigeria have among the highest deforestation rates of any of the African countries, linked in part to rapid population growth rates and expansion of agricultural land, but also partly linked with policies related to land tenure, to the rights to trees of land owners and tenants, and to timber revenue collection and distribution systems. In Ghana for example timber revenues are largely shared between the Forestry Commission and traditional leaders; with no access to official harvesting revenues, local land users facilitate access to trees through informal agreements with chain sawyers whose harvesting and processing practices incur heavy losses and wastage. In both countries as well as in Côte d'Ivoire these problems are widely recognized and analyzed, but there are challenges of political economy in addressing them. These countries all have expanding urban populations and a growing middle class, with rising demand for processed timber products as well as for charcoal. Ghana is participating in the FIP (Forest Investment Program) under the Climate Investment Funds, as well as in preparation of a REDD Readiness strategy with FCPF (Forest Carbon Partnership Facility) support.

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[39] Sudan: Multi-Donor Trust Fund Report: "Export marketing of Sudanese Gum Arabic." Yves Couteadier, 2007.
[40] South Sudan is included among the Sahelian countries because at time of drafting Northern and Southern Sudan were united.
[41] "The Legal and Institutional Framework for the Sustainable Management of Forest Resources in Southern Sudan." World Bank, 2009.

Table 2. Forests and Woodlands in Humid West Africa

Countries/area	Population (millions)	Land Area (sq. km)	Forest Area % of land area (%)	Forest Area Per Person	Deforestation Rate (annually 2000–2010) (%)
Benin	9.2	110,620	41	0.53	–0.99
Côte d'Ivoire	21.5	318,000	33	0.51	0.07
Ghana	24.3	227,540	22	0.21	–1.89
Guinea	10.3	245,720	27	0.67	–0.52
Guinea-Bissau	1.6	28,120	72	1.28	–0.46
Liberia	4.1	96,320	45	1.14	–0.65
Nigeria	158.3	910,770	10	0.06	–3.12
Sierra Leone	5.8	71,620	38	0.49	–0.67
Togo	6.8	54,390	5	0.04	–4.09
Humid West Africa region	**242**	**2,063,100**	**22**	**0.19**	**–1.32**

Note: Togo includes, in addition, 23 percent of land area classified as "other wooded land," Benin 26 percent, and Guinea 24 percent. Ghana and Liberia have no land under the "other wooded land" category and Nigeria only 4 percent.

In reference to jobs and competitiveness, Ghana, Nigeria and Côte d'Ivoire have long established wood industries. Log export bans have been in effect in Ghana, Nigeria and Côte d'Ivoire in order to encourage in-country processing and value-added. The results have mostly been disappointing. (See below and also Chapter II.5.3.)

European market demands have helped drive the sustainability agenda for exported timber products. The FLEGT (Forest Law Enforcement Governance and Trade) process spearheaded by the EU has helped to support this. And much policy advice by the World Bank and other development partners has focused on the export sector. **But often these policies have not been accompanied by measures to support sustainable forest management for timber sold on the local market or to price timber resources at replacement costs**. In particular, log export bans have contributed to a reduction in the price of domestic saw-logs and development of a domestic timber industry with low value added, over-capacity, low conversion rates, and high wastage.[42] These industries are nevertheless a significant source of employment. Informal employment in the forest sector is estimated at 260,000 in Ghana, for example, compared with formal sector employment of 50,000,[43] and contribution of the forest sector to GDP is estimated at six percent. Analytical work on Nigerian forests has resulted in recommendations to re-establish basic management practices, including harvesting levels based on sustainable yields, management plans including forest regeneration, competitive concession allocation and separation of enterprise taxation from economic resource rents.[44]

[42] PROFOR: West African Forest Strategy, 2010.
[43] PROFOR: West Africa Forest Strategy Table 1, 2010
[44] "Nigeria: Strengthening the Nigerian Forest Sector to Enables Sustainable Forestry and Revenue Generation in Nigeria's Productive Forests." World Bank, 2005.

Some analysts believe that Nigeria and Ghana have now passed through the "transition" of deforestation and are ready to re-invest in landscape restoration (on farmlands) and plantation forestry (on degraded forest reserve land), resulting eventually in a mosaic of land uses including trees in the production landscape. Ghana has been selected as a FIP (Forest Investment Program) country, eligible to receive funding through the Climate Investment Funds to address deforestation and forest degradation.

Nigeria has the objective of increasing forest cover from 10 percent to 25 percent of land area over the next 10 years. But the underlying policies, governance frameworks, and institutional capacity need to be put in place to enable this to happen. Several of the West African countries have important tree-crop sectors (cocoa, rubber, palm oil), which generate jobs. The challenge is to support rehabilitation of these sub-sectors through replacing aging trees with more productive stock, rather than clearing more forestland.

Liberia is forest-rich, accounting for 43 percent of remaining Upper Guinean forests. Timber accounted for one-third of export earnings before the conflicts, but with little benefit for local communities. In the post conflict period all existing concessions were cancelled, and there has been focus by the development community on addressing sustainable forest management, with focus on sustainable management for "four Cs:" communities, conservation, (responsible) concession management, and carbon storage. Funding has been limited in a HIPC environment but a US$10 million multi-donor program is under way. Despite strong government commitment, it has been challenging to move forward with this ambitious agenda because of capacity constraints and a difficult broader investment environment. It is estimated that while only 50,000 m^3 is "formally" harvested annually and designated mostly for export, ten times this quantity is informally harvested for local and regional markets.

Coastal, wetland and delta mangrove forests provide an important role in risk management and resilience in West Africa and are a particular feature of that area. They comprise 2.2 million hectares and are a significant resource in Guinea-Bissau, Western Ghana, Guinea, and Sierra Leone; they are badly degraded in Nigeria and Benin. These forests are key to protection of coastal areas from storm surges and coastal flooding including saline intrusion of coastal aquifers; densely populated coastal areas are particularly vulnerable and likely to become more so as climate changes over time. Mangroves also constitute key habitats of juvenile fish for the coastal and marine fisheries, which are of great economic importance in West African countries.[45] There has been some progress in protecting mangrove areas, but far more needs to be done. In terms of broader watershed management, forests play a key role in protection of the upper watersheds of the Senegal and Niger rivers (whose headwaters are in Guinea), as well as management of other major river basins in the region.

West African forests form a biodiversity hotspot, with over 300 mammal and 780 bird species and high degrees of endemism. Conservation is challenged by increasing population densities, limited conservation capacity and, increasingly, pressures from mining and hydroelectric power developments. There are opportunities to address biodiversity while engaging in large-scale mining or hydro-power development. The provision for a conservation offset under the Bumbuna hydroelectric power plant in Sierra Leone is one example.

[45] "The sector employs directly and indirectly three million people in the sub-region, and contributes 10 percent of GDP in Sierra Leone and Guinea Bissau and 10 percent of the workforce in Ghana. With improved resource management, reduced waste, and greater in-country processing and value-added the sector can play much greater role in economic growth and job creation." West Africa Regional Fisheries Program. World Bank. Project Appraisal Report 2009.

I.4.3. Central Africa

The Central African countries are forest-rich. They host the second largest rainforest in the world—the Congo basin and equatorial African rainforests—which play a key role in global climate regulation and are also regarded as a biodiversity hotspot. At the same time the forests are an important provider of employment from the timber industry, both formal (export oriented) and informal (domestic and regional), as well as of livelihoods and food for local populations including indigenous groups. Overall deforestation rates are lower in Central Africa than other regions, and are related mostly to shifting, subsistence level agriculture, and to a lesser (but growing) extent to infrastructure and mining developments. Demand for household energy from rapidly growing urban centers (Kinshasa has over seven million people and is the second largest city in Africa) also exert pressure on forests. The sub-region also has important forests and woodlands outside the Congo Basin; out of DRC's forested area of 120 million ha, 40 million ha are dry land forests in the northeast and south. The eastern mountain forests, surrounded by the densely populated eastern DRC provinces that are still subject to conflict, lie partly in the Nile Basin.

The sub-region is well known for round-wood and timber exports from large forest concessions, traditionally managed by foreign owned companies. Total recorded round-wood harvests for industrial timber, however, are 7.5 million m^3, compared with 1.7 billion m^3 globally. Annual harvests from Czech Republic, for example, whose forested area is 2.7 million ha, average 16.7 million m^3 compared with 3.4 million m^3 from Gabon, whose forested area is 22 million ha. The reason for this is that in Central Africa "production" forests are much less intensively managed than in temperate countries. On average only one to two trees are harvested per hectare every 30 years, which allows sufficient time for natural regeneration and minimizes disturbance to the natural ecosystem. The principal reason for low harvest intensity is that only a few species are of sufficient value to justify the high transport cost—coastal forests in Central Africa are often much more degraded by logging. Access roads become overgrown and impassable within a few years of harvesting.

Table 3. Forests and Woodlands in Central Africa

Countries/area	Population (millions)	Land Area (sq. km)	Forest Area % of land area (%)	Forest Area Per Person	Deforestation Rate (annually 2000–2010) (%)
Cameroon	20.0	472,710	42	1.04	–0.99
Central African Republic	4.5	622,980	36	5.21	–0.13
Congo	3.8	341,500	66	6.20	–0.06
Democratic Republic of the Congo	67.8	2,267,050	68	2.40	–0.20
Equatorial Guinea	0.7	28,050	58	2.47	–0.67
Gabon	1.5	257,670	85	15.19	0.00
Sao tome and Principe	0.0	310	6	0.40	0.00
Central Africa	**98.2**	**3,990,270**	**61**	**2.60**	**–0.24**

Despite the low intensity, logging practices in the past in Central Africa have been criticized for ignoring the interests of local people as well as for allowing access to widespread poaching. There has been much focus in the last 10 years on improving the governance and sustainability of industrial harvesting in Central Africa. Concessions have increasingly been awarded on a competitive basis; with requirements for companies to develop management plans that take into account both environmental impacts[46] *and* the interests and welfare of local people.[47] Nevertheless even though the legal framework is in place in most countries, capacity and tools to provide for implementation on the ground still needs to be strengthened.

Infrastructure development to improve connectivity and access to markets is a priority for all Central African countries.[48] Several also have considerable potential for development of mining resources and hydroelectric power, with employment and revenue earning potential. Construction of the infrastructure necessary to develop these resources will inevitably place pressure on forests.[49] A particular challenge has been that because of lack of inter-ministerial coordination and different interests, mining concessions may be allocated on land already allocated for forest concessions. These pressures can be mitigated, and the economic development also brings opportunities. Specifically, environmental and social mitigation frameworks can include provisions for enhanced forest management, including involvement of local communities, along transport corridors. Mining concessions can provide funding for biodiversity offsets, including funding for their management. The new development can provide added impetus for commitment to a coordinated approach to land use planning (this has been a particular challenge in Cameroon).[50] There may also be scope for more intensive sustainable forest management regimes, with off-take of a greater variety of tree species but more emphasis on managed natural regeneration, in selected forest areas, so long as high-conservation-value forests are adequately provided for in management plans and ecosystem fragmentation is avoided.

In Central Africa forest industries have been a focus of formal sector employment and skills development. Forestry is the most important source of formal, private sector employment in the Republic of Congo, for example. In remote areas in DRC forest industries have provided social services and access to transport.[51] The 52,000 ha ENRA (Enzyme Refiners' Association) concession in Eastern Province Orientale.[52] for example,

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[46] For example setting aside areas of high-conservation value forest, avoiding harvesting near stream-beds, following required standards for access roads, minimizing damage in felling and extraction, and controlling hunting and trapping, especially of protected species.

[47] For example working with local people to identify and leave undisturbed groves and forests of cultural value, reaching agreement on harvesting of forest products of local interest, securing employment and job training, and providing social services.

[48] DRC, for example, with a land area the size of Western Europe and 60 million people, has only 2,000 km of hard-surface roads, less than Montgomery County, Maryland in the U.S..

[49] The issue is being studied through analytical work on the drivers of deforestation, undertaken in the context of development of a regional REDD strategy for the Congo Basin countries, supported by a GEF regional grant to COMIFAC (Central African Forests Commission) for Enhancing the Institutional Capacities on REDD+ Issues for Sustainable Forest Management in the Congo Basin.

[50] Cameroon was participating in a Development Policy Loan for sustainable forest management and nature conservation. Difficulties in reconciling new mining opportunities and finalization of concession agreements for already agreed land allocations for forest management were a major reason for delays in release of, and finally cancellation, of the second tranche of the DPL.

[51] There are instances, nevertheless, of forest enterprises not fulfilling the terms of their social contracts (cahiers des charges), with difficult consequences in often fragile, lawless environments.

[52] *Landscape-Based Conservation in the Congo Basin*. D. Yanggen, K. Angu, and N. Tchamou, eds. IUCN 2010. Chapter 25. Pre-Harvest Forest and Botanical Inventories in ENRA logging concession by JM. Makana, J. Madidi, H. Bikumbu Centre for Tropical Forest Service and Wildlife Conservation Society 2006. These reviews also propose that a more intensive harvesting regime, with higher harvesting volumes and managed natural regeneration might be more environmentally sustainable than the present low intensity approach.

harvests approximately 7,000 m^3 of timber per year, which is processed into semi-finished products, including parquet flooring and furniture, and exported through Eastern Africa. In contrast it is estimated that 100,000 m^3 of rough-sawn timber, equivalent to 300,000 m^3 of round-wood logs, logged mostly by chain saw operators on contract to Ugandan traders, are illegally exported annually through eastern Congo, as much as the entire harvest that is legally exported through the west. This regime produces few jobs and little value added for Congolese citizens, and none of the schools, medical dispensaries and other social infrastructure that regular concessionaires such as ENRA are obliged to provide by law. There is also scope in most Congo Basin countries for plantation establishment on non-forested lands that are not intensively used, so long as the necessary provisions are made to ensure benefit sharing and participation by local communities.

A priority is to create enabling environment for sustainably managing, legalizing, increasing value-added and jobs from the artisanal sector. Legislation in most Central African countries also provides for a portion of government revenues from concessions to be returned to local communities for their use in local development. These policies have presented implementation challenges, where local communities lack financial and development planning capacity, and where forest administrations lack capacity to monitor broader management on the ground. In order to be effective such policies need to be accompanied by strong capacity building programs. Some forest areas have also been designated as community forests. Again, it has not always been easy for communities to manage these sustainably and to local benefit. These challenges re-enforce the argument that improved forest management and governance and broader improved public sector governance and capacity are inter-linked.

Around the major cities fuel-wood and charcoal are major industries but also a major ***source of forest and woodland degradation***. Targeted approaches to address these needs are a priority.

As in West Africa, subsistence agriculture is a cause of forest degradation.[53] Support for agricultural intensification and enhanced productivity is important not only to address deforestation but also to improve food security and incomes in Central Africa. In DRC there are also degraded tree-crop plantations which, with the right enabling conditions (clarification of legal status, transparent management systems), could increase employment and incomes and further reduce pressure on the forest. The process is being started through the ongoing IDA financed Agriculture Rehabilitation and Recovery project.

Central African forests harbor unique ecosystems and biodiversity. All countries are committed to biodiversity conservation and have established protected area systems, in many cases also allowing for co-management with local communities. A challenge for many has been development-sustainable financing mechanisms, faced with the constraints of limited national budgets and competing priorities in countries with high levels of poverty, limited interest in establishment of alternative mechanisms such as endowment funds by the international community, and limited revenues from tourism.[54] Nevertheless there has been progress in all countries. Gabon, a middle-income country largely able to finance its protected area system, has four million ha under protection and an additional five million ha

[53] In DRC the problems have been exacerbated by the past conflicts and large numbers of "internal refugees" who have had no choice but to settle in forest fringes.

[54] Lack of tourism infrastructure, a difficult climate, heavy forest cover impeding easy viewing of wildlife (in contrast to savannah landscapes), and in some countries broader security and investment environment difficulties have contributed to this.

in the production landscape managed for wildlife conservation. There is also progress with biodiversity conservation in production areas. A Green Gabon and nature-based tourism, together with forestry and fisheries, form part of its economic diversification and development strategy. In DRC and Cameroon partnerships with international NGOs have also facilitated development of participatory land-use planning approaches in and around protected areas, with the aim of addressing both conservation and local community interests.

Central Africa is also home to particular ethnic groups with special ties to the forest, specifically the pygmies, some of whom still live traditional nomadic lifestyles. Cameroon and DRC are home to the largest numbers, at 30,000 and 500,000 respectively. Legislation for protection of their rights exists in all countries, but implementation has not always been easy, for historical and cultural reasons as well as logistical and capacity challenges. It is estimated that all but about 20,000 now practice sedentary or semi-sedentary lifestyles but that many remain marginalized and vulnerable.[55] Recent transport, protected areas, and forest projects have included programs specifically targeted at improving pygmies' access to education, health, citizen registration, land, and livelihoods but there are many challenges.[56] Civil society groups play a key role both in advocacy and in assisting with the development of pygmies' rights.

Risk and Resilience: The Congo Basin rainforests plays an important role in **global climate regulation**. Its forests store approximately 35 billion out of a global total of 290 billion tons of carbon stored in forests. The Congo basin countries potentially have much to benefit from participating in REDD programs. They are all actively engaged, both at a country level and through the regional forest organization COMIFAC. DRC is participating in the Forest Investment Program under the Climate Investment Funds. The most effective ways of addressing REDD may, however, lie outside the forest sector, in supporting enhanced agricultural productivity (to reduce the need for extensive "slash and burn" approaches) and in productive fuel-wood and construction wood plantations in the vicinity of the major cities (to reduce the pressure on natural forests).

I.4.4. Eastern Africa

Eastern Africa is highly diverse, including densely populated, fertile, countries such as Uganda, Rwanda and Burundi, and large countries with a great range of landscapes such as Kenya, Ethiopia and Tanzania. Its countries are broadly forest-poor, though it includes several forested biodiversity hotspots. It also includes the island state of Seychelles, whose economy is largely based on high-end tourism and fisheries.

Jobs and Competitiveness: With rapidly increasing urban populations and rising middle classes, there are growing opportunities for farm forestry to meet a range of increasing demands, including fuel-wood and charcoal,[57] poles for the electricity sector, construction timber, fruit, and fiber.[58] Its forests are also rich in wildlife and biodiversity, and Uganda and Rwanda in particular have managed to turn this asset into a thriving tourist industry.[59]

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[55] Strategic Framework for Development Program for the Pygmies of DRC. December 2009 World Bank.
[56] These include practical, logistical, procurement, and financial management challenges even when contracts are given to non-government organizations who may be better equipped to work in remote areas.
[57] See Chapter 2 for a more detailed discussion of challenges and opportunities regarding charcoal and fuel wood.
[58] This paper does not address forest management in Eritrea and Somalia since there has been no active program in the sector for some years.
[59] See also Chapter 2. Kenya and Tanzania also have thriving nature-based tourism industries; these are mostly, though not entirely, in grasslands and coastal areas rather than forests.

Table 4. Forests and Woodlands in East Africa

Countries/area	Population (millions)	Land Area (sq. km)	Forest Area % of Land Area (%)	Forest Area Per Person	Deforestation Rate (annually 2000–2010) (%)
Burundi	8.5	25,680	7	0.02	–1.31
Ethiopia	85.0	1,000,000	12	0.15	–1.03
Kenya	40.9	569,140	6	0.09	–0.32
Eritrea	5.2	101,000	15	0.31	–0.28
Somalia	9.4	627,340	11	0.76	–1.02
Rwanda	10.3	24,670	18	0.04	2.65
Uganda	33.8	197,100	15	0.09	–2.28
United Republic of Tanzania	45.0	885,800	38	0.79	–1.08
Djibouti	0.9	23,180	0	0.01	0.00
Seychelles	0.1	460	89	0.49	0.00
Eastern Africa	**239.0**	**3,454,370**	**18**	**0.32**	**–1.04**

Western Kenya, in particular, has a long tradition of trees in the agricultural landscapes. Kenya, Uganda, Tanzania, and Rwanda all score quite well regarding clarity of land and property rights in the CPIA ratings produced for IDA countries. Ethiopia is also investing heavily in land title registration. It has an ongoing operation, the Sustainable Land Management Project, which supports sustainable land management interventions and title registration together, and plans to scale up this approach.[60]

Some analysts argue that "where there are more people, there are more trees" since there are greater incentives to manage land sustainably for maximum productivity.[61] Others argue that many landscapes, especially in more densely populated countries, go through a "forest and land-use transition curve," progressing from old growth forest, to logged forest, secondary and agro-forests, annual crops and grassland (often with land degradation), reforestation and agro-forestation, resulting in a mosaic landscape with agro-forestry, plantations, crop fields, and woodlots.[62]

Uganda is experiencing the most rapid deforestation rates of any of the East African countries. In part this may be related to the conflict years of the 1970s and 1980s, when there was widespread settlement of populations in forested areas, but it is also related in part to rising population densities and agricultural area expansion. Ugandan demand for timber products is related also to regional "leakage," import of informally cut logs from DRC to Uganda for processing.

[60] See also "Regional Study of the Current Status of Forest Resources in the Countries of the Eastern and Southern Africa Regions and of Opportunities for World Bank and IFC Investment." PROFOR draft report 2009..
[61] International Institute for Environnemental Protection: Camilla Toulmin 2010.
[62] CGIAR Forests, Trees and Agro-forestry Research Program 6: Figure 2.1.

In Tanzania, Kenya, and most recently Uganda the enabling environment for private investment in plantation forestry has improved, and in Tanzania there are accompanying small-holder outgrower schemes. All three countries have quite well established decentralized governments, which have helped provide an enabling environment for community forest management through local districts. The challenge is to ensure that the forest and woodland management agencies, whether their staff are "de-concentrated" (working at local level but reporting to the central forest authority or "decentralized" (working at local level and reporting directly to the local government body), have the capacity and the means to deliver services to communities which facilitate improved local forest management. In Tanzania, the Tanzania Forest and Beekeeping Division (now the Tanzania Forest Service) supported preparation of guidelines for community forest management plans, and support was provided to communities through the mechanism of a Social Action Plan[63] to prepare and implement participatory forest management plans. These covered 4.8 million ha in 25 districts by 2010.

Risk and resilience: The need to protect key "water towers" (forested mountains and hillsides) has reached high political prominence particularly in Kenya, because of the link between forest degradation and reduction in the reliability of flows in the water bodies which constitute the drinking water supplies to Nairobi. In Rwanda there is strong recognition of the link between reliable hydroelectric power generation and watershed protection, as well as the role of landscape restoration in agricultural landscapes. Indeed Rwanda, despite very high population densities, has succeeded in reversing deforestation. The Rwanda landscape restoration program has attracted funding from a variety of sources and is helping to restore fertility, integrate trees in production landscapes, control erosion, and protect key wetlands while increasing agricultural productivity.[64] Ethiopia has also invested in landscape restoration, though there is scope substantially to expand the scale—the country now plans to embark on a large-scale "re-greening" program as part of a broader green growth strategy. Ethiopia, Kenya and Tanzania are participating in the REDD readiness process, and all three countries have pilot projects under way supported by the Bio-Carbon Fund.

I.4.5. Southern Africa

Southern Africa is characterized by the miombo dry land forests, which cover 2.4 million ha (twice the area of the Congo Basin rainforests) and span from Mozambique to Angola and include also Southern Tanzania and Southern DRC. Most of these countries (except Malawi, Lesotho, and the small island states) are relatively land-abundant. Madagascar and South Africa are also mega-biodiversity countries.

Role of miombo forests in livelihoods and risk management: Recent analytical work[65] emphasizes the multiple services that miombo woodlands provide to poor rural populations, providing for late dry-season grazing for livestock from foliage, along with firewood and building material, leaf litter and nutrients for fields, and a range of non-timber forest products including honey and niche products providing ingredients for cosmetics, amarula (a cream liqueur) and food. Miombo woodland products also provide a dry-season social safety net which would need to be replaced by alternatives if the forests are lost. Miombo also plays a role in sustainable agricultural land management

[63] Financed through the Tanzania Forest Conservation and Management Project (completed in 2010).
[64] Rwanda Land Husbandry, Water Harvesting and Hillside Irrigation program
[65] "Managing the Miombo Woodlands of Southern Africa: Policies, Incentives and Options for the Rural Poor." World Bank, 2008

Table 5. Forests and Woodlands in Southern Africa

Countries/area	Population (millions)	Land Area (sq. km)	Forest Area % of Land Area (%)	Forest Area Per Person	Deforestation Rate (Annually 2000–2010) (%)
Botswana	2.0	566,730	20	5.91	–0.94
South Africa	50.5	1,214,470	8	0.19	0.00
Madagascar	20.1	581,540	22	0.66	–0.43
Comoros	0.7	1,860	2	0.00	–6.25
Mauritius	1.3	2,030	17	0.03	–1.03
Mozambique	23.4	786,380	50	1.74	–0.53
Malawi	15.7	94,080	34	0.22	–0.93
Namibia	2.2	823,290	9	3.42	–0.92
Zambia	13.3	743,390	67	3.92	–0.33
Zimbabwe	12.6	386,850	40	1.25	–1.73
Angola	19.0	1,246,700	47	3.25	–0.21
Lesotho	2.1	30,360	1	0.02	0.48
Swaziland	1.2	17,200	33	0.48	0.87
Mayotte	0.2	370	38	0.07	–1.25
Reunion	0.8	2,500	35	0.11	0.11
Southern Africa	**163.2**	**5,931,020**	**33**	**1.24**	**–0.48**

through maintenance of trees[66] in the production landscape. Mozambique and Madagascar are both participating in the REDD readiness process.

Mozambique, while also having the characteristics of other "miombo forest" countries, has potential for commercial forest management for timber production, especially in the north, both from natural forests and from establishment of plantations. Recent studies[67] emphasize the need to assess carefully existing land use patterns and rights of customary users before decisions are made to move forward with new plantations, as well as to consider small-holder out-grower schemes. Mozambique's land tenure legislation is regarded as progressive, allowing for community land use plans and putting the onus on land developers to ensure that local rights are respected.

[66] Zambia for example has adopted conservation agriculture on over 300,000 ha, in which trees, including Faidherbia albida (a species also used in the Sahel), play a major role.

[67] "Mozambique: Forest Sector Analytical Note: Policy, Challenges and Future Priorities." Isilda Nhantumbo for Mozambique Environment Sector Working Group 2009. A recent global study, "Rising Global Interest in Farmland: Can It Yield Sustainable and Equitable Benefits?" K. Deininger and D. Byerlee, World Bank 2010, outlines seven principles for responsible investment in new land development. These include: (a) respecting existing land and resource rights; (b) ensuring food security; (c) ensuring transparency, good governance, and a proper enabling environment; (d) consultation and participation; (e) responsible agro-investing; (f) social sustainability; and (g) environmental sustainability. See also Section II.5 of this document.

Swaziland, Zimbabwe, South Africa and Zambia all have well-established and functioning plantations, which supply pulp and paper industries in Swaziland and South Africa, and construction needs for the mining industry in Zambia,. In South Africa species selection did not always take into account the hydrological regime and water-demanding trees contributed in some areas to stream-flow depletion. Both Angola and Zambia are, relatively speaking, highly urbanized (58 percent for Angola, 36 percent for Zambia) and sparsely populated. Forests face less pressure than in many other countries. While in all of the countries forests play a key role in watershed protection, in Malawi their role in ensuring regular water supplies to hydroelectric energy development as well as to maintaining productivity in production landscapes is increasingly recognized (see also Section II.3.1).

In Madagascar forests harbor the bulk of rare and endangered species in this "mega-biodiversity" country. Madagascar has faced particular challenges in managing its substantial network of protected areas. International partners have taken over responsibility for some, while others have depended on government funding. A conservation trust fund is being established, but funding would need to be very substantial if it is to meet required management costs of US$14 million annually (see Chapter II.4 Box 7). Madagascar has also participated in the Bio-Carbon Fund, which has supported establishment of a biodiversity corridor. Madagascar also faces governance challenges, and there has been illegal harvesting for export of the protected rosewood species from its national parks.[68]

[68] Since early 2011 Madagascar has not had a functioning internationally recognized government, and this has exacerbated governance and operational difficulties.

Chapter II

Investing in Forests and Woodlands in Africa: Practical Lessons

II.1. Portfolio Overview

Africa committed US$291 million of IDA/IBRD resources to forests and woodlands in the 2007–2010 period. Operations are tracked using a sectoral coding system.[69] This figure includes only US$28 million committed in FY 2010 and compares with total new IDA/IBRD commitments to Africa for that year of over US$11 billion and to agriculture as a whole of over US$800 million. The commitments for forestry generally formed part of larger rural investment, energy, watershed management, community development, or development policy lending operations. Only one "stand-alone" forest operation (in DRC) was approved over the 2007–2010 period. Over the same period US$1.212 billion was committed to forests Bank-wide; US$790 million of this was for a DPL in Brazil with a substantial forest reform element, and a further US$160 million for forestry operations in China focusing on forestry in degraded areas. The lack of investment "to scale" in forests and landscape restoration in Africa has limited development impact.

One objective of the 2002 Bank Forest Strategy, which emphasized the role that improved forest and woodland management plays in economic growth, poverty reduction and protection of key global public goods, was to provide a framework for scaling up support for forests.[70] Despite extensive consultations and support for the strategy, it did not result in increased Bank investment in the sector in the Africa region for a number of reasons.

The role of forests, trees and woodlands in broader growth and resilience strategies has not always been sufficiently articulated. Forestry has sometimes been regarded too narrowly,[71] and has been perceived as "difficult," raising many safeguard issues on the one

[69] Lending to forests and broader natural resource management is tracked through the agricultural and rural development portfolio tracking system, although operations may be managed by other sectors such as energy or environment.

[70] "Sustaining Forests: A World Bank Strategy." 2002

[71] As emphasized in Chapter 1 official data on forests focuses on export oriented timber production, rather than on the much wider role those forests have as a source of wood energy and non-timber forest products, and in watershed protection and landscape restoration.

hand, and not always contributing directly to growth on the other. These perceptions were well studied in analysis undertaken by IEG as part of preparation of the 2002 strategy and were described as the "chilling effect." Experience in countries where the Bank has been involved, such as Mexico, China, and Brazil would suggest that the Africa region would benefit from a more ambitious and broader approach in investing in forests, trees, and woodlands.[72] A new IEG review of the forest portfolio is now under way.

In addition to IDA support in Africa five new GEF projects focusing on forest biodiversity were approved (for US$21 million) and seven forest/afforestation activities benefited from pilot carbon finance for a total of US$10.2 million. The coding system, however, only partially captures overall support for forest and landscape management under broader land and water management programs or programs which are "mapped" to other sectors.

Despite the modest level of support overall, there are a good lessons for program and policy design moving forward from investment operations and from analytical work, both in Africa and from other regions. The following paragraphs summarize these by major thematic area, within the overall framework of the Africa Strategy. These lessons, together with the analysis in Chapter 1, which provided an assessment of opportunities by subregion, provide the basis for development of the proposed Action Plan.

II.2. Investing in Employment and Competitiveness

II.2.1. Meeting Growing Demands for Wood-based Energy

Recent analytical work on the wood-based energy sector concluded that demand for fuel-wood and charcoal is likely to continue to grow in Africa, and will account for about three-quarters of residential energy consumption in 2030, serving about one billion people. Even as access to electricity improves, charcoal will continue to provide a lower cost and more flexible energy resource for urban households, particularly for cooking. This is in contrast to other regions where demand for woody biomass energy is expected gradually to decline. Despite this, Bank support for wood-based energy management has been very modest. Africa energy investments in the 2000–2008 period totaled US$4.6 billion of which only US$36 million was classified as investment in cooking and biomass. Investment in forest operations overall has also been very modest (see Section II.1).

There has nevertheless been positive experience in the programs that have been supported, particularly in "forest scarce" countries. Senegal, for example, has made great progress in meeting growing urban demands for charcoal while providing an enabling environment for job creation and improved woodland management. This has required a mix of investments and policy and regulatory incentives that have been sustained over time, as well as incorporation of forest management into broader decentralization initiatives (see Box 1). There have been similar successful initiatives in Mali and Niger. And the Bank's new Energy Strategy also recognizes the importance of sustainable, community based wood-fuel production and improved stoves in the energy strategy of lower income countries.

[72] One additional constraint in the Africa region in recent years may have been, as part of the SDN integration process in 2007, the separation of the work on forests and natural resource management on the one hand, and agriculture on the other, into two separate units. Previously, units integrating the agriculture, environment and social agendas handled the work.. This separation did not take place in the LAC and EAP regions, where there has been more Bank support for forests, including community forests and agro-forestry, than in Africa.

Box 1 Senegal: Supply-side Intervention via Community-based Sustainable Forest Management

Over 40 percent of Senegal's population lives in urban areas and its capital city, Dakar, has nearly three million people. As in most of Africa, supply of wood-fuel to the urban and peri-urban markets in Senegal was previously based on non-sustainable forest resource management practices such as clear-cutting. Low wood-to-charcoal conversion efficiency and high overall charcoal consumption at about 1.2 times the total consumption of wood-fuel put great pressure on the supply system. Forest service rights were only given to urban-based traders, which resulted in vertically integrated and oligopolistic supply systems; the traders surpassed charcoal production quotas due to ineffective monitoring systems.

By providing technical support for participating rural communities, the World Bank's PROGEDE initiative helped to establish sustainable community-based forest management systems over an area of approximately 380,000 hectares with a capacity to supply more than 370,000 tons per year of sustainable wood-fuel, equal to about 65,000 tons of charcoal per year. Results greatly exceeded the goals at the time of appraisal. In addition, PROGEDE supported the establishment of community-based micro-enterprises including beneficiary-operated improved carbonization units for charcoal development. Other successful accomplishments were the comprehensive communication strategy that supported the SFM implementation and capacity development for revitalizing dormant women's groups.

The lessons from PROGEDE are the following:

- Traditional energy supply systems can be sustainable and supply side management (through community-based natural resources management) is an essential intervention.
- Legally enforceable forest tenure rights are important to provide incentives for the community to invest in the management of the resources.
- A clear and fair pricing system, which maximizes producer prices along with a transparent fiscal and taxation system needs to be created.
- Gender investments should not be underestimated as they bring the most significant and tangible poverty alleviation impacts, especially in terms of educating the beneficiary population, particularly the children.

A second phase of the program, PROGEDE 2, funded jointly by IDA and the Nordic Development Program for US$19 million, aims to increase the availability of diversified household fuels in a sustainable and gender-equitable way, and to contribute to increasing the income of participating communities while preserving the forest ecosystems. There are four components: i) the institutional reforms of the charcoal value chain address the political economy and equity issues (income and decision making) particularly in the (supplying) regions, and in the country as a whole. They support central and decentralized government, and communities for implementation of the reform; ii) sustainable wood fuels supply management provides technical assistance, logistical support and equipment to central and decentralized forestry services, local collectivities, including Community-Based Organizations (CBOs) and Non Governmental Organizations (NGOs) involved in forest/natural resource management/biodiversity and environmental-social protection activities; iii) the promotion and diversification of modern household energy provides technical assistance, logistical means, and equipment for the Directorate of Petroleum Products and Household Energy (DPHE) and private entrepreneurs to support massive production and dissemination of improved stoves and alternative wood fuel; and iv) project implementation supports scaling up the program by local organizations.

Source: PROGEDE Staff Appraisal Reports and Implementation Completion Reports World Bank 2005 and 2010

In DRC the Bank through the Bio-Carbon Fund has supported private sector investment in afforestation on the Bateke plateau, a savannah area in the vicinity of Kinshasa. It has supported afforestation of 4200 hectares with a mix of exotic and local species, intercropped with cassava and other food crops. The project will provide wood energy for

Kinshasa, taking pressure off natural forests, and is expected to sequester 2.4 Mt CO_2 over 20 years. The project provides a model for larger scale investment in tree plantations on savannah land in the vicinity of large cities in Africa, providing for construction timber and poles as well as fuel wood and charcoal. The FIP (Forest Investment Program), in recognition of the role that wood energy from natural forests and woodlands plays in forest degradation, includes a substantial element of support for wood energy plantations (intercropped with food crops as in Bateke).

A comprehensive study on the charcoal industry in Tanzania[73] concluded that a mix of policy reforms and support measures are necessarily to manage the sector transparently, provide for benefit sharing and incentives for sustainable management and efficiency along the production and value chain. Tanzania has quite an effective decentralized system of forest management; but local governments do not retain revenues from regulating the charcoal trade, which are remitted to Central Government.

The study recommended reforms aligning revenue retention with responsibilities, together with incentives for reinvesting revenues into sustainable forest management. A second reform would include use of transport based charcoal fees, together with fixed checkpoints and trading sites. These reforms should be combined with increased support for community forest management and harvesting plans, for improved technologies for wood conversion to charcoal, for private woodlots in the vicinity of large towns, for improved stoves and for piloting commercial briquetting. The paper emphasizes that these measures need to be adopted together rather than piecemeal; but the benefits would include: income generation especially for local communities, incentives for development of fuel-efficient technologies, reliable household energy supply, carbon sequestration from reduced deforestation, potential carbon revenues, and broader landscape restoration.

In summary, the region has undertaken substantial analytical work and has sufficient experience with "what it takes" for wood energy management, production, processing, transport and sale to be a substantial and sustainable source of jobs and innovation. Scaling up support for these approaches in several countries should be feasible.

II.2.2. Investing in Improved Multi-Purpose Forest Management

The Bank has supported a broad-based approach to improved forest management in three countries over recent years: Cameroon, Tanzania, and most recently DRC. All have combined institutional and governance reforms with capacity building and support for improved forest management and nature conservation.

A recently completed project in Tanzania (Forest Conservation and Management, IDA credit US$31 million, GEF grant US$7 million) aimed to support implementation of anticipated major institutional reforms in the forest sector. These reforms did not take place during the project life—there were changes in government, and ownership for reform was lacking. Nevertheless, by focusing on support for practical improvements on the ground, the project succeeded in meeting or exceeding a number of targets, in effective decentralized community forest management (nearly five million ha), in enabling the private sector to take over management of neglected government plantations (16,000 ha), in establishing an endowment fund for protection of the globally important hotspot the Eastern Arc mountain forests (535,000 ha) and in improved revenue management.

[73] "Environmental Crisis or Sustainable Development Opportunity? Transforming the Charcoal Sector in Tanzania: A Policy Note." World Bank, March 2009.

The DRC Forestry and Nature Conservation Project, approved in 2009 (US$64 million IDA grant, US$6 million GEF grant) was the first investment loan for a sector recovering from nearly 30 years of neglect and conflict. Its objectives are: to build capacity to manage forests sustainably and equitably in three pilot provinces; and, following a series of legal reforms passed in the 2003–2008 period in support of transparency and multi-purpose forest management, to enhance collaboration among all stakeholders,. Key indicators include development of forest management plans including social responsibility contracts in the pilot provinces, stability in trends of key bio-indicator species, more effective monitoring and reporting of logging operations, more accurate revenue collection, participatory land use planning, improvements in the livelihoods and in the empowerment of forest communities, and enhanced protected-area management. The program also supports staff retirement and renewal. DRC has the second largest area of rainforest globally after Brazil, and is increasingly a global player in broader debates on sustainable rainforest management and avoiding deforestation and degradation (REDD). The project is also helping it to build capacity in this regard. Implementation of forest management plans including community participation and social responsibility contracts remains a challenge.

II.2.3. Meeting Growing Demand in Africa for Timber Products

In recent decades, support for forests and broader natural resource management in Africa has generally been targeted at improving sustainable production and natural resource management on the one hand, or on improving governance and transparency in the export sector on the other. There has been less focus on strengthening value chains and improving efficiency and competitiveness down the value chain for products aimed at local and regional markets, especially from the small and medium scale enterprises that are a principle source of employment. Except for wood-fuel, there has also been less focus on supporting an enabling environment for timber plantations, either by smallholders or by larger scale private sector operators. With Africa's population set to double over the next 40 years, and with economic growth driving rising domestic demand for timber products, this is an area which has been neglected.

Timber Value Chains

Cameroon is the only country to date where the Bank supporting programs to improve value-added and sustainability in the domestic timber-processing sector. Cameroon's forest industry accounts for nine percent of GDP and US$500 million of exports. The industry is highly segmented (see also Box 2), with a highly specialized export sector employing 10,000 to 12,000, and a largely informal sector targeted at domestic and regional markets, employing over 40,000 but using unsustainable, highly wasteful logging and processing practices. The nature-based and cultural tourism sector is similarly underdeveloped.

Analytical work in Central African Republic[74] has concluded that even in low capacity countries there is scope to invest in domestic timber processing to increase employment and value-added in country. This is a key objective of the Forestry and Economic Diversification Project under preparation in Republic of Congo.

Sustainable Timber production from plantations: While a number of operations have supported plantations for wood-fuel production there has been less focus by the Bank on

[74] Central African Republic Environmental Analysis; "Managing Forests for Economic Growth." World Bank. 2009.

Box 2 Cameroon: Forest Management Challenges in a Changing Context

About 40 percent, or 22 million ha of Cameroon's national territory, is covered by rainforest. Its forests have been managed commercially since colonial times, with most production traditionally targeted at export markets in Europe. More recently Asia has also become an important market, now accounting for around 80 percent of export volumes. About 30 percent of the African timber processed in Asia is re-exported to Europe. The timber sector accounts for nine percent of GDP. Cameroon's forests are rich in biodiversity. They also provide a range of non-timber forest products to local inhabitants, as well as fuel-wood and timber for the local construction industry.

Economic crises in the 1990s provided the impetus for developing a series of far reaching reforms aimed at supporting transparent forest allocation and sustainable management, including improved revenue management. Key elements included zoning of the forest estate into permanent forests (including production forests and protected areas), and non-permanent forests; introduction of transparent and competitive forest concessioning systems, together with a legal requirement for forest management planning; allocation of a portion of forest tax revenues to local councils and communities; establishment of community forests; and institutional reforms. Cameroon also participated in the Forest Law Enforcement Governance and Trade initiative (FLEGT), together with independent monitoring of forest management activities.

The Bank has supported these reforms, firstly through macro-economic policy lending under HIPC (debt reduction) programs, and then through a targeted forest and environment Development Policy Operation (DPO), funded with a blended IDA and GEF grant. In many ways the results have been impressive. Four million hectares out of 7.2 million hectares zoned to become production forest have been legally recognized as "Forest Management Units" (part of the Permanent Forest Estate). Seventy percent of Cameroon's forest exports have independent certification of the legal origin of their products, and management plans have been approved for over 95 percent of concessions. Thirty percent of the forest area is managed primarily for conservation and a network of protected areas has been created. But the choice of lending instrument (development policy reform) for the latest program may have led to neglect of capacity building and reform implementation on the ground, particularly in regard to community forests, but also for the Ministry of Forests and Fauna. And a "dual forest economy" has developed, with exported timber products meeting the exacting standards of European markets (with high transaction costs), while the domestic and regional timber and non-timber forest products markets are largely informal, with substantial waste in production and processing. Since the internal market is estimated to consume about the same volume of timber as the export market, better regulation is critical to sustainable management of the forest estate as a whole. The modest size of the DPO, US$36 million, together with complexities in design, may not have provided sufficient leverage for reform, and in particular to complete the process of legally recognizing Production Forests.

The priority now may be to support the sustainable and profitable management of community forests and provide an enabling environment for sustainable management of the domestic timber sector, while continuing to support broader conservation and sustainable management of Cameroon's forests. A second priority would be development of a consistent legal framework for land-use planning covering all sectors. As Cameroon's mining and agro-industrial potential has emerged, in some areas mining and large-scale agricultural plantation concessions have been allocated on land already designated for sustainable forest management, leading the Government to stall the legal recognition process. It was this issue that finally prevented release of the second tranche of the DPO. In the context of this rising competition for land, completing the process of legally recognizing the remaining 3.2 million hectares of forest zoned for production is a high priority. This is an area where some initiatives for example REDD+ funding may usefully be applied to secure substantial areas from conversion to agriculture, though REDD+ is unlikely to be able to compete with mining revenues.

Source: "Cameroon: 10 years of Forest Reform." World Bank, 2010, and supervision reports from the DPO.

Box 3: Value Chain Enhancement for the Domestic Timber Industry

The Competitive Value Chains project[a] (approved in June 2010 with a credit of US$30m) aims to stimulate sustainable growth and employment by improving productivity and value added in two sub-sectors—the wood and tourism value chains—and providing specialized infrastructure investments, vocational training, policy reforms, and targeted innovation grants. Specifically 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 the consolidation of processes for establishing new businesses. The project also supports improvements to Cameroon's tourism sector. The operation is too new to yield lessons, but could potentially be a model for other countries in Africa (such as Ghana, Nigeria, potentially Uganda and Ethiopia) with rapidly growing domestic markets for timber products.

[a] "Cameroon Competitive Value Chains Project: Project Appraisal Document." World Bank, 2010.

support for plantations for timber production. Government plantations were established in a number of countries in the mid 20th century, but in many cases, with declines in public funding for forestry departments these plantations were neglected, and there was not always a favorable environment for establishment of private sector processing industries.

More recently, however, there has been positive experience in this regard in both Tanzania and Kenya. In Kenya the Natural Resources Management Project has supported (among other interventions aimed at improved forest and irrigation management) an inventory of plantations under the control of the Kenya Forest Service, and a program to transfer management of these to the private sector. The Tanzania Forest Management and Conservation project supported plantation inventories (80,000 ha) providing managers with information to improve plantation oversight. Ministry of Finance also agreed that a share of revenues generated from the plantations could be used for plantation management. Log exports were banned, increasing incentives for in-country processing.[75] A paper-mill reopened, and a number of small sawmills were established. Finally private and community plantation management was accepted, and over 16,000 ha are now managed according to this regime. In Western Kenya farmers for decades have included trees as part of their production landscape, for fruit, poles, the local construction industry, and for soil stabilization purposes.[76]

More broadly, plantations offer the potential to increase production of timber for both fuel-wood and timber. But the right incentives need to be there for private sector or smallholder investment. A key element in creating an enabling environment for investment in plantations, by the private sector, communities, or through private-sector outgrower schemes, is clarity regarding land-use rights (see also Chapter II.5). A second element is provision of appropriate incentive frameworks to overcome the time barrier between investing in planting and maintaining trees, and seeing returns from harvesting (which then finance replanting. B**ox** 4 on the Uganda Saw-log Production Grant Scheme (SPGS) illustrates one approach to overcoming investment barriers in a country with a relatively well-advanced land rights system. Household woodlots can also provide timber products as in Western Kenya.

[75] In countries that already have processing capacity, such as Ghana and Indonesia, log export bans have contributed to domestic log price suppression and excess logging for processing. Tanzania had almost no in-country processing capacity so the context was different. See also Section II.5.3.

[76] Chapter 1 has also emphasized the key role that trees play in many countries in broader landscape restoration, soil fertility, and agricultural productivity enhancement. This topic very much "cuts across" the two pillars of the Africa Strategy. In this chapter landscape restoration is included in lessons from experience under the "risk and resilience" pillar (See Section II.3).

Box 4 Uganda: Supporting Timber Plantations through the Saw-log Production Grant Scheme

Uganda, with a land area of 240,000 km and a fast-growing population of over 30 million, currently has forested area of only 18 percent, compared with 21 percent in 2000. A history of underfunding and poor management has contributed to degradation of forest plantations, which were originally publicly managed. Productive plantations on degraded forestland would help to meet growing timber demands while relieving pressure on remaining natural forests.

The objective of the EU-supported Saw-log Production Grant Scheme (SPGS) is to promote private sector investment in timber production through support for plantations on degraded forest land.

SPGS provides two of the key factors needed for plantation establishment, namely, financial and technical support. The financial assistance comes in the form of a direct subsidy (or grant) paid in the first two years after planting. The total grant is US$330 per hectare but it is only paid where planters meet the standards as laid out in the contracts that have to be first agreed upon. No money is paid up-front. The main standards are: sound species choice, using only improved seed, having at least 80 percent survival after planting, and ensuring weeding and protection operations are carried out over a two year period. The principle is "growing trees" rather than simply "planting trees."

SPGS offers sound technical support for planters too, with two commercial foresters who also provide training to Ugandan foresters. Through field meetings, practical training courses, and publications, the SPGS team has started to convince people that commercial forestry represents a serious business option for those with suitable land in Uganda.

SPGS has supported 10,000 ha of plantations to date, from small community-based, tree planting associations up to larger scale commercial operations. The program has also supported seedling plantations by community groups, led to the formation of the Uganda Timber Growers Association, and supported creation of 5000 documented jobs. Up to now the planters have utilized degraded land in forest reserves leased by the National Forest Authority, but there is growing interest in using private land. There are requests for assistance with planting an additional 25,000 ha. The program has been extended to 2013.

Source: EU SPGS website

II.2.4. Meeting Demands for Non-timber Forest Products

Non-timber forest products (NTFP) include bush-meat, which is very prevalent in Central Africa but also West Africa, specialized products such as shea-nut and gum arabic (from dry-forest belts) and a range of food and medicinal products. Analytical work on the miombo forests of Southern Africa has emphasized the key role they play in local livelihoods, but also the "social protection" that they provide in the form of food products that are available when crops grown on arable land are inadequate, for example in times of drought.[77] They are a key part of a "risk mitigation and resilience" strategy for households but since they are more often self-consumed rather than traded, they do not show up in most economic statistics. Even where NTFP are widely traded domestically (or regionally) and provide a key source of cash income, as is the case with bush-meat, their value is not accounted for. The Bank's forests and climate change portfolio in DRC is addressing this gap by working with the National Statistical Office to have bush-meat and other NTFP form part of the LSMS (Living Standards Measurement Survey) questions. There are exceptions[78] to the undervaluation of NTFP as in the case of gum arabic, which has long-established export markets.

[77] NTFP also "cross the boundary" between providing jobs and incomes (the first pillar of the Africa strategy) and forming part of risk and resilience strategies (the second pillar).
[78] Chapter I summarizes the role of gum arabic in Sudan.

The Bank has generally considered support of NTFP as part of broader forest management and conservation programs; but since the portfolio has been limited in scope (except in Central Africa), this area has also received relatively little attention. The proposed Forest Investment Program (FIP) for Burkina recognizes their value and proposes a specific support program for them.[79] The proposal would be supported by IFC as part of a broader strategy to increase value-added, employment, and economic potential from forest products by focusing on value chain enhancement and realizing market potential. Increasing sustainability and productivity of NTFP would logically form part of a sustainable management and REDD+ strategy in several African countries.

II.3. Forests and Woodlands in Resilience and Vulnerability Reduction Strategies

II.3.1. Landscape Restoration and Watershed Management

The key role that forests and vegetative cover play in soil fertility management, watershed conservation, flood management and climate risk management is widely recognized. In recognition of forests' protection functions, several middle-income countries have actively pursued policies to support watershed restoration and recovery of forests (see Box 6 on China). Programs are also under way in several African countries, but the broad economic value of pursuing large-scale landscape restoration is still only beginning to be translated into large-scale programs within the continent. Two operations under preparation also recognize the key role of forests, trees, and woodlands in risk and resilience.

There is a substantial body of literature regarding landscape restoration in Africa. These include a comprehensive review "Sustainable Land Management in Practice" published in early 2011 through the TerrAfrica AU/NEPAD platform, in cooperation with WOCAT (World Overview of Conservation Technologies and Approaches) and FAO. This document provides a rich body of good practices in agro-forestry, conservation agriculture, agro-silvi-pastoral practices, high forest management and watershed restoration. Additional documents have been produced in connection with a recent Landscape Investment Forum in Nairobi, related to work on climate-smart agriculture.[80] Box 5 provides an example of landscape restoration in Niger, one of the most climate-challenged countries in Africa. The results can now be seem on satellite imagery comparing vegetation cover in Niger and Nigeria, and have contributed to the phenomenon known as *re-greening of the desert*. In highly vulnerable areas landscape restoration programs can be designed as part of broader social protection programs, as in the Ethiopia Productive Social Safety nets program. It is important that adequate technical support be provided for the restoration measures—this requires collaboration between different organizations at the local level.

With regard to the Bank portfolio, The Lake Victoria Environmental Management Program includes a strong focus on participatory watershed management, building on

[79] Burkina: Proposed Forest Investment Program. Government of Burkina Faso, FIP website May 2011

[80] In May 2011 the potential was highlighted at a Landscape Investment Forum in Nairobi hosted by Profor and the Agroforestry Centre together with TerrAfrica, The World Bank, IUCN, and Agro-Ecological Partners. The forum included three background papers: "Tree-based Technologies for Investing in Landscape Restoration," "Where Private Investment Incentives Converge with Landscape Investment Goals," and "Opportunities and Constraints for Investing in Forests and Trees in Landscapes." Conference papers highlighted, as this paper does, the importance of clear land-rights regimes, with land rights holders the having responsibility for managing natural resources and seeking capital and partnerships.

Box 5 Niger: Farmer Managed Natural Forest Regeneration and Landscape Restoration

Following the severe droughts of the 1970s and early 1980s, Niger initiated a number of policy reforms. As regards forests and woodlands, a key reform gave local people the right to trees planted on farmland and community land. A decentralization law also gave responsibility to decentralized government structures for preparing and implementing local development plans. A simple land registration system was put in place, and modest technical and financial incentives were provided. It is estimated that over 4 million hectares of woodlands were regenerated, with the predominant species, a local kind of acacia called *Faidherbia albida*, which sheds its leaves in the rainy season, providing soil nutrients permitting increases in crop yields, fodder, and fuel-wood, as well as shade for animals. Sorghum yields increased by 20–85 percent and millet yields by 15–50 percent.

The Niger Community Action Program for Climate Resilience (PAC CR), financed through the PPCR (Pilot Program for Climate Resilience) for US$63 million, has the objective of integrating sustainable land and water management into local development plans in vulnerable regions. The initial focus on Community Development Plans (supported by the Bank-financed Programme d'Action Communautaire) has been on local infrastructure and social facilities, together with capacity building for improved fiduciary, planning, and implementation management, and important pilots on sustainable land management. The PAC CR focuses scaling up sustainable land and water management and drought resistant technologies, while also expanding its successful experience with programs of farmer managed forest regeneration. Trees, combined with other sustainable land and water management approaches, play a key role in enhancing organic matter in the soils and managing erosion, while providing fodder for livestock, and fruit and fuel-wood for populations. PAC CR also has a component for social protection focused on the most vulnerable households. The objective is to increase the resilience and reduce the vulnerability of communities to climate variability and change by supporting investment in more productive, resilient landscapes.

The proposed Great Green Wall Initiative for the Sahel, supported by several Sahel country governments and the GEF, builds on the "greening of the desert" experience in Niger and other Sahelian countries.

Source: Agro-Forestry Center, CGIAR, and PACCR draft project appraisal document.

successful pilots from Western Kenya and elsewhere. The Ethiopia Sustainable Land Management project is being expanded and restructured to take on board the very successful lessons of the Humbo biocarbon reforestation program and will have a greater focus on tree-planting in the production landscape. The Ethiopian government's intention is to embark on a broad re-greening program as part of a green growth strategy.

There are valuable lessons to be learned from China, which has a wealth of experience in landscape restoration, and has adapted its approaches over the decades in the light of experience. Among its best known programs is the Loess Plateau scheme, which has benefited over 2.5 million people, which has combined landscape restoration and tree planting with improved livestock management, enhanced agricultural productivity and water management, terracing, and enhanced rights to land. Box 6 provides another example from China more focused on forests, but with some similar features regarding land rights.

Watershed management, including reforestation of sloping lands, erosion control measures and trees in the production landscape, builds the resilience of productive farmland to extreme weather events, restores fertility, and helps prolong the useful life of hydrological infrastructure through controlling run-off and siltation. 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

Box 6 China: Forest Development for Soil and Water Conservation and Restoration of Degraded Lands

China is a forest-scarce country, with only 0.14 ha per capita of forestland. Nevertheless, over the last 25 years it has managed to increase tree cover from 115 million ha in the 1980s to 195 million ha today. Forests provide 40 percent of rural energy and two-thirds of domestic wood consumption. China recognizes the key role also that forests play in watershed protection, control of desertification, and air pollution, carbon sequestration and habitat conservation. One of the pillars of its partnership strategy with the Bank is managing resource scarcities and environmental challenges.

China has had a history of cooperation with the Bank on watershed protection and forest restoration. Initially the focus was on support for state and collective plantations and protected area management, but the focus has evolved to include multi-functional plantations with strong environmental benefits, and support of the Governments forest land tenure reforms, which deliver use-right certificates to farmers groups and individuals on collective forest land.

The Integrated Forest Development Project approved in 2010 for US$100 million is an IBRD loan project aiming to increase vegetative cover in environmentally degraded areas in five provinces, and to improve forest management. Components include establishment of multi-functional forests to create windbreaks and sand breaks, soil and water conservation forests and farmland shelterbelts, improvements in resiliency of existing plantations, and institutional support and monitoring. The economic rate of return is estimated at 15 percent* and includes estimates of direct production benefits, with alternatives including productivity increases in adjacent farmland and retention of sediments.

**Note*: If carbon sequestration benefits are added, with CO_2 values conservatively estimated at US$7 per ton, the ERR rises by one percentage point to 16 percent.

erosion, and sedimentation are serious threats to the ecosystem's function and the economic service provision capacity of the Basin. Incidence of flash floods is increasing, and sediment loads are impacting fisheries, irrigation and hydropower 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 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.

Coastal mangrove restoration can also protect land and structures from saline intrusion and storm surges. This is a priority, especially in parts of West Africa, Mozambique, and Madagascar, but except for modest support through GEF grants it has received limited support as yet in Africa. Several OECD countries and some Latin American countries have adopted Payment for Environmental Services (PES) approaches where users of ecosystem functions lower in the watershed (urban water, hydroelectric energy) pay landholders in the upper watershed to conserve ecosystem functions through maintaining forest cover. Programs in Costa Rica are among the best known. There is potential for applying such PES schemes more widely in Africa, beyond the few pilots currently under implementation, but given the prevailing weakness of institutions in many countries, such schemes will have to be kept simple and robust, and special attention has to be paid to institutional design.

II.3.2. Developing Infrastructure while Protecting Forests

Improving infrastructure access is an imperative for growth and poverty reduction in Africa. Poorly designed roads can contribute to erosion and landslides, while new road construction passing through forested areas can contribute to increased forest degradation and biodiversity loss unless there is careful planning. There are often also social issues that require careful management. Construction of hydroelectric facilities in forested areas also faces similar challenges. Careful attention to design can address these challenges and benefit local communities, as well as contribute to broader economic development.

DRC, with a population of 60 million and a land area the size of Western Europe, had only 2,000 km of paved roads in the early 2000s, following decades of conflict and poor government. Even major provincial cities were barely accessible by road. Re-establishing communications and access was key to economic recovery and social integration. But DRC also includes the world's second largest rainforest, 86 million ha, of global importance and home to indigenous peoples and vulnerable forest communities. Experience has shown that careful planning and implementation is necessary to ensure that all social groups benefit from road rehabilitation in a culturally appropriate manner.

The objective of the Proroutes Project in DRC is to reestablish lasting access between provincial capitals and districts and territories 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: (i) reopen and maintain about 1,800 kilometers of the high-priority road network within Province Orientale and between South Kivu and Katanga; (ii) strengthen road-agencies capacities and maintain them thereafter; (iii) strengthen the capacity of the ministry and agencies involved in the road sector, including strategy and policy formulation; and (iv) help the country combine post-conflict infrastructure recovery with the protection of environment and indigenous communities such as the pygmies. 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 of both illegal timber and protected species among marketed bush-meat at selected check points, and health and school enrollment indicators.

There are currently implementation challenges.[81] But the overall objectives of the operation remain sound.

II.3.3. Mitigating Climate Change through Enhanced Woodland and Forest Management

Africa accounts for only four percent of GHG emissions globally, and building resilience and adaptation in all sectors is the priority in the Africa Climate Change strategy.[82] But 65 percent of African emissions are due to poor land use practices, deforestation, and forest degradation, of which about half is from deforestation and forest degradation. The proportion worldwide is 30 percent. Furthermore, in Africa carbon stocks declined by five billion tons over the 1990–2010 period, compared with a net decline globally of 10 billion tons.[83]

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[81] The contractor has been slow starting work on implementation of the environment and social mitigation plan.
[82] "Making Development Climate Resilient: a World Bank Strategy for Sub-Saharan Africa." October 2009.
[83] Source: *FAO Global Forest Resources Assessment 2010*. Table 2.22. Globally stocks declined from 299 to 289 billion tons and in Africa from 61 to 56 billion tons. Note that carbon stocks increased in Europe and North America by a

Africa thus makes a significant global contribution to emissions from deforestation and stands to benefit from adopting strategies to reduce emissions from deforestation and forest degradation (REDD). These could enable it to benefit from emerging sources of climate finance. Norway has already committed US$1 billion to Indonesia to help it implement REDD strategies once these are developed, as well as US$100 million to Tanzania, and the Amazon Fund established in Brazil (see Box 8) has already attracted substantial funding from a range of sources.

Fourteen African countries are now developing "REDD readiness" plans with support from the Bank-managed Forest Carbon Partnership Facility (FCPF) and similar programs supported by the UNDP and other development partners. And three African countries (Ghana, Burkina, and DRC) have been selected to participate in the Forest Investment Program (FIP), one of the Climate Investment Funds established to pilot country investment programs in low carbon, climate resilient development. DRC was the first of the eight pilot countries to have its FIP investment plan approved.

The prospect of REDD funding has elicited widespread interest among African countries and many different approaches are being tested. The GEF-supported program "Enhancing Capacities on REDD issues for Sustainable Forest Management in the Congo Basin" (US$13 million) aims to help strengthen knowledge and coordination on REDD, build technical and scientific capacity for measurement and monitoring of carbon, including development of allometric equations for key forest types, and mainstream REDD into sustainable forest management projects. It complements US$59 million from the Congo Basin Forest Fund and other sources. Ethiopia plans to scale up its positive experience with the Humbo/Soddo Bio-Carbon Fund project to access REDD funding for more wide-scale community-based forest restoration in degraded landscapes—often of high biodiversity[84]—linking it with the ongoing IDA-funded Sustainable land management project.

One useful lesson to date is that countries need to adopt a phased approach, tackling manageable problems first, while building capacity to address longer-term issues. Thus while the DRC REDD readiness strategy includes a comprehensive approach addressing all types of forests, the FIP (requested FIP financing US$60 million) focuses on tackling deforestation in areas where the problem is most acute, around the major cities, while supporting also longer-term strategy and capacity development. Similarly the FIP for Burkina (requested FIP financing US$26 million) will likely focus on community forest management and agro-forestry, while building broader capacity to address REDD over the long term. One of the challenges with REDD is managing expectations. Meeting requirements to access REDD financing is quite challenging institutionally. Furthermore at least in the short-run, and as Brazil has acknowledged with its Amazon Basin Fund (see Box 8) most funding in the next years is likely to come from public sources and foundations, rather than from carbon markets.

The Bio-Carbon Fund has provided very valuable experience to several African countries in project management and development and in MRV (monitoring, reporting, and verification), which can usefully be scaled up as additional funding becomes available. This document has mentioned some, including the Ibi Bateke project in DRC, the

total of four billion tons over the same period, declined by 1.5 billion tons in Asia and by eight billion tons in South America.

[84] The forest activities also include biodiversity conservation, specifically restoration of habitat for a range of threatened species including the Ethiopian Banana Frog, the Ethiopian Thicket Rat, and the Nechisar Nightjar.

Humbo landscape restoration project in Ethiopia, community tree planting in Uganda, and the biodiversity corridor reforestation program in Madagascar. These programs generally work best if combined with other sources of funding such as IDA.

II.4. Investing in Cultural and Habitat Values for Conservation and Employment Diversification

Much of Africa's biodiversity is found in forests, so support of forest management has often included support of sustainable management of high conservation value forests (HCVF) or to protected areas. In some countries, it has been possible to combine support for improved protected area management with tourism development.

Uganda is rich in biodiversity and is home to 11 percent of the world's bird species and seven percent of its mammals, including half of the global population of the charismatic and highly threatened mountain gorilla, which lives in fragile montane ecosystems shared with Rwanda and DRC. Uganda's landscapes and wildlife offer tourist potential, but its protected areas were underfunded and neglected in the 1980s and 1990s. The Protected Area Management and Sustainable Utilization Project was approved in 2003 and combined IDA (US$27 million) and GEF (US$8 million) funding. Its objectives were to ensure the effective, long-term conservation of Uganda's biodiversity in the face of competing economic pressures, by supporting the strengthening and financial sustainability of Uganda's protected area system and the involvement of local communities in conservation. Key indicators included increases in revenues from tourism from the Uganda Wildlife Authority, increased number of key mammal species and reduced poaching, satisfaction of communities in handling of problem animals, increase in visitor numbers, and incorporation of wildlife education into school curriculums. The project has been successfully completed, and Uganda is a known wildlife tourism destination.

Gabon is investing in development of its protected area system and intends to expand ecotourism as part of its economic diversification strategy. And tourism is the second largest foreign exchange earner in Zambia after copper.

Despite this, protected areas are under-funded in many countries, and strategies to work with local people are still being developed. Some high conservation value areas have limited medium term tourism potential because of security concerns, and have also been affected by conflict and the influx of internally displaced people. These areas will likely need assistance from the international conservation community, working in close collaboration with local people, for the coming decades. Box 7 on ecosystem conservation in Madagascar summarizes the challenges that this mega-diversity country is facing.

More broadly forest-based wildlife tourism has been slower to develop than savannah-based tourism, partly because the wildlife is more difficult to see and often less obviously charismatic, and because the climate is often more difficult and adequate infrastructure development more challenging. But evolving tastes in tourism are making these destinations more attractive; technology is also helping to bring down the costs of smaller-scale tourism packages. Chapter I.4.4 mentioned the successful example of ecotourism around the mountain gorillas or Rwanda and Uganda, and ecotourism is also reviving over the

Box 7 Forest Ecosystems in Madagascar: Conservation and Sustainable Management Challenges

Madagascar has one of the highest rates of biodiversity and endemism in the world. Managing and extending the system of protected areas has been a priority for development partners, environmental foundations, and the government for two decades. Protected areas currently cover 2.8 million ha and there are plans to increase this to six million ha. Much of its biodiversity is found in forests, which cover about 10 million ha. Ecotourism is the second highest source of foreign exchange earnings; receipts totaled US$400 million in 2008. Madagascar remains, however, one of the poorer countries in Africa, with per capita GNI of US$410, and much of the population dependent on subsistence agriculture.

Madagascar faces three challenges with regard to sustainable ecosystem management, exacerbated by the political difficulties it has had over the last two years. The first concerns long term financing of protected areas. Financing has been largely dependent on project-specific approaches supported by particular foundations, with no long-term sources available. The second concerns the need to balance conservation of biodiversity with the livelihood needs of the local population. Earlier management regimes had focused on "strict" protection, excluding local populations and providing them compensation and support for livelihoods outside the protected areas. The third concerns poaching and illegal extraction of high value species such as rosewood.

In terms of financing, annual management costs for six million ha are estimated at US$14 million. Budget allocations to protected area management and park levies are about US$1 million each. Alternatives being considered are an endowment fund (but capitalization would need to be substantial, in the hundreds* rather than the currently available tens of millions of US dollars) and private sector, foundation or community co-management, and investment of tourism revenues in the parks. Expanding community co-management of parks, and moving towards sustainable resource management rather than strict protection, is being considered. And legalizing, taxing, and monitoring natural resource utilization is a third. All programs would require investments in capacity building, resource assessment, and monitoring to enable transparent management and decision-making processes.

Note: With a yield of three percent, an endowment fund of over US$400 million would be needed to fund management costs of US$14 million per year.

Source: "L'environnement à Madagascar: un Atout à préserver, des Enjeux à Maîtriser" 2010 World Bank Policy note.

border in Eastern DRC, with Bank/GEF support. There is also a growing forest-based ecotourism industry serving local residents in countries such as Republic of Congo, Cameroon, and Nigeria.[85]

II.5. Institutions, Capacity and Governance

II.5.1. Underlying Principles

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

[85] A new biodiversity strategy is under preparation for the Africa region, which will address these challenges in more detail.

Experience to date re-enforces the key messages of the Africa Regional Strategy. The Tanzania forest management and conservation project envisaged a wide-reaching institutional reform of the forest sector, for which, with a change in government, there was no appetite. However, it was able to succeed where capacity and decision-making processes were better aligned, in community forestry. In Cameroon on the other hand, while the reform efforts supported certification in the export sector, where there was capacity to do this (there was alignment between regulations, incentives, and capacity), the policy enabling environment for community forestry has not yet been backed up by capacity building and development of implementation mechanisms to help this to work on the ground.

Analytical work[86] has suggested a three-pillar approach to forest governance encompassing: (i) policy, institutional and legal frameworks including economic incentives and benefit sharing; (ii) planning and decision making processes and institutions including stakeholder participation and transparency; and (iii) implementation, enforcement and compliance, including administration of property rights, coordination and measures to address corruption. **Box 8 on Brazil provides an example of a broad-reaching forest management program that seeks to align capacity and governance through supporting improved policy and decision-making processes**. These three broad principles are also being followed in the Bank operations in Africa, which focus on forest governance and institutional building.

Regarding forest institutions more broadly, five principles help define performance.[87] These are:

1. Delegating: an understanding between multiple stakeholders that certain goods and services will be supplied (there may not always be clarity of roles in service delivery between local and centralized administrations, or some service functions, such as technical services in agro-forestry, may fall outside the remit of both forestry and agricultural agencies);

2. Financing: provision of financial resources to enable the service to be provided or paid for (frequently financial resources and responsibilities are not well aligned for forest organizations);

3. Performing: the service is actually supplied;

4. Using information: mechanisms are in place for obtaining information and monitoring performance; and,

5. Enforcement: institutions are able to impose sanctions or provide rewards for poor/good performance.

The challenge has been for forest institutions to adapt to the changing needs of rapidly growing populations in African countries, with growing demands for tree products and the broader economic and eco-system services that trees and forests provide. Forest institutions were originally established largely as centralized regulatory and management agencies (concerned with high forest concession

[86] "A Framework for Assessing Forest Governance." PROFOR, 2011.
[87] The World Development Report 2004 provides an in-depth analysis of how institutions can effectively perform service delivery functions. It also uses the five principles that help define performance.

management, plantation management, and forest protection). They have had increasingly to work with people and become service delivery agencies, often working cross-sectorally within a decentralized environment. There have also been challenges in aligning responsibilities and expectations, capacity, and financing. But Information and Communication Technology (ICT), especially if integrated into broader e-government information and accountability systems, provides many opportunities. These issues are discussed in more detail in subsequent sections of this chapter.

II.5.2. Experience with Governance Reforms; Africa and Elsewhere

The DRC Forestry and Nature Conservation Project recognizes that implementation of the wide-reaching reforms which have created the enabling environment for socially and environmentally responsible forest management will not be possible without capacity building at local level for enforcement and adequate information systems, so a substantial portion of project activities are directed at building local capacity, both for communities and for the local forest administrations. (See also Section II.2.2).

In Gabon, the Bank supported reforms to forest governance including improved transparency in the allocation of logging permits and tax collection, forest management planning and removal of a state company monopoly on exports. In Gabon the DPL (US$15 million), which also covered the environment, biodiversity, fisheries, and mining sectors, has had the additional impact of encouraging different ministries to come together to address natural resource governance issues. Gabon is now turning its attention to economic diversification, including development of the timber processing industry and fisheries.

In Ghana development policy lending (Natural Resource and Environmental Governance DPL US$30 million) helped to bring together a range of different development partners. But the content of the DPL was on the export sector which is already quite well managed, while the domestic and regional timber industry, which operates largely outside the formal sector using wasteful chain-sawing methods with substantial processing losses (but which creates many more jobs than the formal sector and causes less felling damage to the cocoa farms where many of the trees are cut), is the major cause of degradation of the remaining forests. The best formal sector timber industries in Ghana are exporting (semi-)finished furniture parts to Europe and are employing more people per m^3 than the chain-sawyers.

In Liberia the Bank, with other development partners, has also assisted with improving sustainable forest management following the end of the conflicts through a three-pillar approach known as "the three Cs:" community, commercial, and conservation forest management, to which has been added a fourth, "carbon." The overall level of support has been limited by Liberia's limited access to IDA as a post conflict, HIPC country, but a package of funding totaling US$10 million from IDA, GEF, FPCF, FLEGT, Profor and others[88] has helped to establish a system for confirming the traceability of timber exports, develop management plans, strengthen protected area management and "get ready for REDD." As with Ghana, timber produced informally for the domestic and regional market is more significant that the export market; the next stage in support will focus on

[88] The range of funding sources has helped gain support from a number of development partners but has also posed quite high administrative costs, a challenge for a country with as little capacity as Liberia. Expectations concerning the rate of implementation of reforms on the ground may also have been over-ambitious. The number of development partners, often with differing priorities, also impeded progress.

continued capacity building for sustainable forest management with a greater focus on communities and REDD.

In Central African Republic, steps that the country had committed to implement under the FLEGT initiative with the European Commission were included in a broader development policy loan under the Highly Indebted Poor Countries (HIPC) debt reduction initiative, which was successfully implemented.

Another approach that has been successful has been "bottom-up" governance. The Brazil policy reforms (see Box 8) were the result of wide-reaching participatory processes and provide information systems for transparency so that society broadly can know whether rules are being followed. With regard to forest management plans, loggers are now obliged to generate wood cutting permits and timber waybills digitally, creating an information flow that is visible to all stakeholders. Mobile swat teams "controlling the local controllers" have also been introduced.

In DRC the timber producers' association collects the area-based fees from its concessionaire members and hands over checks for area-based fees to the Ministry of Finance with wide publicity, increasing transparency and demand for accountability on how funds are spent. Community score-cards and community-based monitoring and evaluation mechanisms also work well in some circumstances and have been used extensively in the health and education sectors. Local communities participate in preparation of forest management plans in Cameroon, for example. A number of the country examples have highlighted the role of decentralized institutions (Niger, Tanzania) and the need for effective working relationships with deconcentrated branches of national institutions. Approaches need to be adapted to country circumstances.

The Brazil example builds on several years of investment in capacity building, information systems, institution building, and clarification of land rights; as mentioned above, the key principle is aligning capacity and institutions with improved governance, incentives, and policy processes. It also illustrates that successfully challenging political economy obstacles may require substantial DPL funding. Section 2.5.3 summarizes some of the challenges that African administrations have faced in aligning policies, institutional capacity, financing and governance.

II.5.3. Aligning Institutional Capacity, Financing and Responsibility in Africa

Institutional structures vary widely among countries. There is no single "right" structure. In some countries forest departments form part of broader natural resource management ministries (as in most francophone countries) while in some they form parts of ministries of agriculture (as in Ethiopia) or energy (as in Malawi) and in others (as in Kenya) the regulatory and the management role are separated. Some countries have several related agencies whose salary structure falls outside that of the civil service (e.g., Ghana). In an increasing number of countries responsibility for important elements of forest and woodland management are delegated to local administrations.

Forest financing regimes are often not well aligned with responsibilities for forest management. Forest authorities may have responsibility for sustainable forest management in state owned forests while harvesting and lease fees are directed to the Treasury. Frequently, however, recurrent budgets are not released to the forest authorities

Box 8 Brazil: Aligning Policies, Incentives, Capacity and Governance for Sustainable Forest Management—a Comprehensive Approach: US$1.3 billion DPL

The Brazilian authorities are committed to implementing policies that enable long-term environmentally sustainable economic development, and the objective of the DPL was to enable them to improve environmental management and further integrate principles of sustainability into natural resource management (including forests), as well as to address climate change concerns.

Forests cover 550 million ha, 64 percent of Brazil's territory. In addition to the role forests play in biodiversity and climate regulation, they are the basis for timber, furniture, firewood, and charcoal production as well as for a range of non-timber products. Over past decades about 18 percent of the Amazon forests have been lost, due to large-scale cattle ranching and unsustainable agricultural and logging practices.

Brazil has over the past decade implemented a series of measures to address sustainable management of the Amazon; but enforcement and monitoring was difficult in the early years. In 2003 it launched the Plan to Prevent and Combat Deforestation in the Amazon, involving 14 different ministries, and putting in place a participatory process for development of a comprehensive Sustainable Amazon Plan, which has now been enacted. The program includes establishment of ecological/economic zoning plans. Programs are also under way for the (severely degraded) Atlantic Rainforests.

Monitoring and enforcement plays a key role; a satellite monitoring system has been put in place which can locate deforestation areas every 7–10 days rather than annually as previously. This has enabled prompt action against illegal activities. Deforestation in the Amazon was 0.27 percent in 2007 compared with 0.66 percent in 2003.

The Forest Code provides for the maintenance of vegetative cover on private rural property, and the Public Forest Management Law supports establishment of sustainable forest management concessions based on regional best practices, including provisions that favor local communities, and reduce fees for certified operations. The Ministry of Environment has also enacted a number of institutional reforms, including establishment and adequate staffing of the National Biodiversity Management Institute and the Brazilian Forest Service.

Recognizing the key role of private investment and finance, the Brazilian authorities have mandated the cessation of bank lending to agricultural producers who do not have the necessary environmental permits. The major Brazil Development Bank (BDNES) has restructured its programs on forests and agriculture to provide incentives for long-term management, and has revised key sectoral lending guidelines. These include support for planted forests and for rehabilitation of degraded areas. BDNES is a key source of over one-third of long-term financing for Brazil's economic development.

Finally the Brazilian government has created the Amazon Fund as a channel for receiving compensation for reducing GHG from deforestation without having to rely of market-based mechanisms. The Fund is managed by BNDES, and will be capitalized by donations conditioned to reductions in deforestation. It will provide grants addressing sustainable forest, biodiversity, and protected area management, zoning and land regularization, monitoring and enforcement, and rehabilitation of degraded areas.

Brazil has greater financial and administrative capacity to implement and monitor far-reaching reforms than most African countries, but the program illustrates the range of measures that may be adopted in reform programs.

Source: Brazil Environment and Natural resources Development Policy Loan: Project Appraisal Document World Bank 2010

as planned by the Treasury, which reduces the capacity of forest authorities to fulfill their functions, often with a net negative impact on revenue generation. And frequently information on public expenditure on forests is provided only by central government, not by the local governments, which may have more direct responsibilities for supporting local

communities. Public budgets frequently finance primarily administrative costs, protected area management costs, research and education, and policy reform and institutional development. Little financial support may be allocated to local administrations for community forest management and it may not be recorded or monitored as expenditure on forests.[89]

A PROFOR-funded study done by IUCN summarizes the revenues and expenditure sources for forest administrations for a number of countries in East Africa. In Uganda, for example, revenues from harvesting licenses are US$0.7 million while expenditures are US$3.6 million, of which 14 percent is financed by government, 21 percent from internally generated revenues and 45 percent from external sources. But these figures do not take into account expenditures on protected area management or on locally managed forests. In Ethiopia by contrast revenues are US$2.4 million and expenditures US$36 million, 76 percent financed from government sources.[90] In the Republic of Congo, the public investment by Ministry of Forests, Sustainable Development and Environment is approximately US$30 million (1.5 percent of the investment budget, nearly double the budget of aquaculture and fisheries and about one-third that of agriculture and livestock), focused on capacity building, including strengthening the work on inventory and traceability, but also protected area management, community forest management, and afforestation. Revenues from harvesting fees to the Treasury are approximately US$40 million and export revenues US$200 million. These examples illustrate the very wide variations in approach. The Bank's policy dialogue would usefully pay more attention on working with Ministries of Finance on the public goods aspects of forests and need to finance adequately from budget.

A second challenge has been that agricultural specialists and forest specialists have traditionally come from different educational traditions, while their work increasingly overlaps at a landscape level and in delivering services to local populations. A practical way of addressing this issue is that practitioners from both institutions work together on program implementation.

A third challenge has been lack of data and information and monitoring systems, linked in turn to lack of financing and insufficient priority to this function. The reported value of non-timber forest products harvested in Africa (FAO Global Forest Resource Assessment 2010), for example, was US$0.5 billion in 2005, compared with US$8.4 billion for Europe, despite the economic and livelihoods importance of NTFP for Africa. The NTFP sub-sector is largely informal in Africa. But the problem with poor statistics is that "what is not measured is not valued." The ongoing work on REDD in many countries, and better geo-spatial and ground-truthing approaches, are gradually improving the accuracy of assessment of forest and woodland stocks, but not yet the value of timber and non-timber products from trees and forests. And under the DRC Forestry and Nature Conservation project, support is being given to the National Statistics Office to value non-timber forest products that are produced for home consumption. Quantifying and valuing the timber and non-timber forest products used for subsistence purposes using systematic survey and statistical methods, and including these in national accounts, is a priority capacity-building activity for many African countries. This has been a neglected area. Programs supporting improved forest and woodland management in Africa, including

[89] "Livelihoods and Sustainable Management of Forests in Eastern and Southern Africa." IUCN for PROFOR, October 2011 (draft).

[90] PROFOR is starting work on an analysis of public expenditure on forests in a number of countries globally using established public expenditure methodologies. This may not capture expenditure at all levels of government, however, particularly at the local level which is important in many African countries.

global programs such as the Forest Investment Program and the Forest Carbon Partnership Facility, need to systematically include elements for improved data collection on both the stock and the flow of timber and non-timber forest products and services.

Lack of access to long-term finance for private sector investment is a fourth challenge, related to broader institutional constraints and weak development of financial markets. Bank analysis has confirmed that in Ghana, one of the African countries with the best overall business environment, access to medium and long-term finance for smallholders in the agricultural sector does not exist in the commercial banking system at present. Public support for facilitate development of such mechanisms would be justified in the present environment in most countries.[91] Improving the enabling environment for private sector development including access to finance is a priority for the Finance and Private Sector Development department of the Africa region, and there are many opportunities for cross-sectoral collaboration. This area presents opportunities for partnerships with FPD.

IFC has a growing portfolio in agri-business, including facilitation of access to working capital and investment and advisory services along the value chain. **The IFC Forest Strategy, approved in 2010, emphasizes three pillars: people, planet and profit.** These pillars translate into: (i) creating employment, strengthening small business, and reducing reliance on imports; (ii) foresting barren wasteland, recycling and reducing energy and water consumption; and (iii) implementing strong sustainability standard to enhance brands, increasing access to financing based on the Equator Principles, and reducing costs through better use of capacity. Globally its forest portfolio is US$1 billion and includes investments throughout the value chain. Its portfolio outside Southern Africa is more limited at present and includes support for recycling in Nigeria, and to plantation management and timber processing in Tanzania (see Box 9). It also offers advisory services in several areas and is working on ecotourism in several countries including Mozambique, in cooperation with the Bank.

Box 9 Tanzania: An Example of Private Sector Investment in Plantations with IFC and Green Resources

Green Resources' industrial operation, Sao Hill Industries, is East Africa's largest sawmill and the largest electricity pole plant in the region; it also has joinery and charcoal plants and has several sales branches throughout Tanzania. It also operates an electricity pole plant in Uganda. The industrial operations generated US$11million of revenues in 2010.

Green Resources aims to follow the highest international environmental standards by conserving natural forest and other valuable habitats. Green Resources Limited (GRL) the Tanzania plantation company, now has three of its forests certified according to the Forest Stewardship Council® standard, the world's leading standard for environmental and sustainable forest management. The company aims to certify all its forests according to these standards. As part of this policy, the company only harvests plantation forest, for Green Resources is a plantation, carbon offset, forest products, and renewable energy company. The company was established in 1995 and is a private Norwegian company with over 70 shareholders. It employed more than 5,300 people at the end of 2010 and has invested US$100 million in its African operations since its inception. Green Resources mainly operates in Mozambique, Tanzania, and Uganda, with a small operation in Southern Sudan.

Green Resources planted 6,000 ha in 2010 and has now 20,000 ha of plantations.

Source: Green Resources Website

[91] "Third Agricultural Development Policy Loan." World Bank. April 2011

Some countries have instituted log export bans or restrictions, to encourage wood industry development and domestic value-added. Log export bans have a major downside, however, in that they reduce the value of logs by as much as 40–60 percent. This leads to a situation where more money can be made from importing derelict, inefficient sawmills than from proper investment in further processing—e.g. in furniture parts plants, which generate 50 times the employment per m^3 that a sawmill provides. The end result is exactly the opposite of what is intended: few jobs generated and highly valuable logs processed wastefully. In practice, the outcome of log export bans has varied according to the country context. In Tanzania, where there is very little domestic processing capacity, but where reforms improved the enabling environment for plantation investment and there was progress on land rights, this has contributed to interest by the private sector in taking over management of some plantations and in opening of sawmills. In Ghana and Nigeria, however, without a supportive enabling environment for sustainable management of the domestic sector, it has contributed to over-capacity in the sawmill industry and wasteful approaches to logging and processing. Once log export bans are in place, it is very hard to remove them. Therefore alternative measures, such as the competitive auction of log export quotas, as was successfully practiced in Côte d'Ivoire from the late 1980's to the late 1990's, which is easier to adjust to changing national and international circumstances, is normally preferable.

Previous sections have also highlighted the importance of land rights, the positive role of local communities in managing forests and woodlands, and the need to align rights, responsibilities, and capacity. According to data provided to FAO, of 20 countries providing information, over 95 percent of forestland was state-owned (FAO Forest Resource Assessment 2010). But returns do not provide full information on decentralized and community user rights regimes (e.g., in countries such as Tanzania and Niger).

Until recently, broader Bank engagement in land rights work was quite limited in Africa, in contrast to some other regions. This has been despite the recognition that secure, transparent land rights play a key role in broader economic development and creation of an enabling environment for private sector investment. Lack of clarity in land-use rights and rights to trees, to management of "common, open access land," and to land-use planning more broadly, has acted as a disincentive for long-term investment in land based activities, including in trees, woodlots, and forest plantations. This issue is linked, in the case of forestland to lack of alignment of responsibilities and incentives. It has contributed to the high level of informality of the sector and to unsustainable land and forest resource use. Furthermore institutional fragmentation has led to cases of a particular land area being allocated a forest concession, and at the same time a mining concession. Globally, nearly 40 percent of industrial timber is produced from plantations, but outside Southern Africa the sub-sector is little developed in the region. The main reasons for this are lack of access to land, and lack of access to finance.

The African Union in 2009 endorsed a Land Policy Framework whose vision to "address land issues in a manner that contributes to political stability, sustainable management of natural resources, and enables all stakeholders to achieve high economic growth and a better quality of life." The Bank has developed an approach to land-use rights that recognizes that customary and modern systems may exist side-by-side. Key elements relevant to the forest agenda include: (i) community-based systematic land titling; (ii) integration of land use planning into systematic documentation of land rights; and (iii) surveying, valuation, and improved management of state lands.[92]

[92] Chapter 1 also referred to the paper "Rising Global Interest in Farmland" by K. Deininger and D. Byerlee which outlined principles of responsible private sector investment

Ensuring that the rights of local communities are respected is a key element of all of these agendas. One approach that is being successfully implemented in Mozambique is demand-based land-use planning and titling, both for communities and for potential developers.[93] Bank engagement in participatory land-use planning has been limited because of safeguards risks concerns, despite its importance. Forest and woodland land management and land use rights are closely linked agendas, in view also of the link between increased agricultural productivity and reduced deforestation and degradation.

Decentralized, community driven approaches to forest and woodland management need to be linked to broader decentralization agendas to deliver effectively. Recent analytical work has suggested[94] that effective approaches combine fiscal, political, and administrative decentralization in revenue management and mobilization, decision-making, and conducting business with effective accountability mechanisms for each. Programs also need to be adapted to particular local political economy circumstances and include careful stakeholder analysis.

These cross-cutting issues of governance, capacity, decentralization, accountability mechanisms and land rights together with the broader enabling environment for private sector investment re-enforce the argument for a multi-sectoral approach to enhancing the role that improved forest and woodland management can play in Africa's economic development and resilience.

II.5.4. Governance, Capacity-building and Information & Communication Technology: An Area of Growing Opportunity

The ICT transformation offers opportunities for support for more efficient and transparent forest institutions. Forest management is an information-intensive operation and stands to benefit from ICT, especially if innovations are aligned with wider, 'whole of government' e-development policies. Previous sections have also highlighted that there is an urgent need to improve the availability and quality of information (e.g. statistical data) in the sector. Information systems can only be as good as the data that is in them. But ICT can also reduce the cost of collecting this information.

Cell phones and Internet connections are important tools in information dissemination or collection from the general public but greater advantage needs to be taken of these tools. Resource inventories are perhaps most the widely used application for ICT

Table 6. ICT Statistics

	Cell phone subscriptions		Internet users	
	2009	**2004**	**2009**	**2004**
Total, million	313.2	54.2	73.6	11.8
per 100 people	*37.6*	*7.4*	*8.8*	*1.6*

Source: World Development Indicators database

[93] The Millennium Challenge Corporation has played a role in this area in Mozambique.
[94] "Decentralization and Community Governance." Development Policy Review 2010, S.Yilmaz et al.

in Africa. Such inventories are, however, based on "big" ICT, not on devices and applications targeted at the general public. In addition, in most countries inventories are carried on a project basis with little, if any, continuity in data collection or recording. It may be that the MRV requirements of REDD-schemes will improve the situation.

Some applications and devices can be used off grid as well. For example, in Ethiopia mobile phone service providers use network towers that use off-grid power. While electricity coverage still remains a problem in parts of rural Africa, the situation is improving and appropriate applications and devices have been developed. Also community radio can access listeners whose communities are not electrified.

Some examples of innovative ICT-solutions in Africa outside the forest sector include crowd sourcing, mobile banking, and community radio and internet/wireless price and weather information for fishermen. Forest applications include:[95]

- ***Participatory Mapping in Cameroon:*** This project was implemented in partnership with local and indigenous forest communities where community members were trained to use GPS-enabled handheld computers to create forest inventory maps. The computers run specially developed, icon-driven software that requires no literacy skills. The users carried the devices on their daily expeditions into the forest, recording their use of resources and their observations of any logging activities they encountered. However, the system failed to achieve long-term sustainability due to unclear incentives for the participants.

- ***Madagascar: Fire Alert System:*** Conservation International's (CI's) Center for Applied Biodiversity Science, Madagascar's Ministère de l'Environnement, des Forêts et du Tourisme, and the U.S. Agency for International Development developed an e-mail alert system for fires in or around protected areas and areas of high biological importance. It is a fully automated analysis and alert system that delivers a range of products tailored to a user's specific needs, such as simple text-based e-mails containing the coordinates of active fires in user-defined regions, or file attachments to be used in other applications.

- ***Ghana and Liberia: Wood Tracking Systems:*** The Ghana National Wood Tracking System (WTS) follows the chain of custody of wood across the country, allowing Ghana to demonstrate compliance and control of its timber supply chains and to secure access to premium markets in the European Union and the United States. Liberfor, the new timber chain-of-custody system in Liberia, has been designed to prevent a return to the uncontrolled logging of the past. The system is being operated on a build-operate-transfer basis by SGS Liberia.[96]

- ***Gabon: Global Legal Information Network:*** The Global Legal Information Network (GLIN) is an electronic online tool that enables access to up-to-date legal information at a low cost.[97] In Gabon, the government has used GLIN to publish the primary sources of the law—specifically, environmental law—to aid in successful implementation of forest law enforcement and governance

[95] For a more detailed discussion, see Castrén, Tuukka and Madhavi Pillai. 2011. "Forest Governance 2.0—A Primer on ICTs and Governance." Washington DC, Program on Forests (PROFOR) available at http://www.profor.info/profor/knowledge/information-management-and-forest-governance

[96] SGS (Société Générale de Surveillance) Qualifor is a company which provides independent sustainability certification services for a number of products including forest products

[97] http://www. glin.gov.

processes. Currently, GLIN provides access to almost 2,000 laws and continues to update the system by adding new laws as they are published.

- ***Uganda: Legal and policy architecture for expanding the role of ICTs in all spheres of development*** has been created. However, in general, the forest sector has lagged behind in adopting these technologies. The high cost and specialized technical skills needed for traditional remote sensing and GIS applications have been limiting factors, and there are broader governance and accountability problems. Illegal loggers and poachers are exploiting the growth of mobile phone connectivity in the country. On the other hand ICT applications are being used to optimize plantation management and processing. The experience from Uganda also demonstrates how linking ICT and e-readiness assessment to extensive governance diagnostics provides a good basis for reform. Innovative, low-cost applications would thrive, and radio is still the most influential technology to reach the rural population.

Experience with outcomes on introduction of ICT for forest administrations in Africa is not yet available, but projects in India, Eastern Europe, and Central Asia suggest that a major challenge was for government staff to have the IT familiarity to draw up procurement specifications which would get the best from the technology to improve information management and thus core business processes. A second was to ensure that staff at local as well as central levels were familiar with the applications. And a third was the need for good statistical information.

A "check-list" of good practice for ICT would include clearly defining information needs, entry points and appropriate technology, culturally relevant applications, end users, financial sustainability, data security, adequate data and information, and stakeholder buy-in.[98]

Table 7 summarizes available ICT applications for improved forest governance, also highlighting issues and challenges related to their application.

II.6. A Thematic Action Plan

Chapter 1 has identified the challenges and opportunities for improved forest and woodland management in Africa, grouped by sub-region. Chapter 2 has summarized lessons of experience in different thematic areas, grouped broadly within the pillars of the Africa Strategy, and has also highlighted challenges and lessons related to the underlying pillars of governance and capacity building. It has discussed links with other institutional challenges, including land rights and decentralization. It has summarized the opportunities which the "ICT revolution" can bring to the sector, and discussed the role of ICT in the sector, and the role of private sector development and value-chain enhancement more broadly.

The following sections re-group proposed priority areas for investment into seven thematic business areas, many of which contribute to both pillars of the Africa Strategy. Chapter 3 discusses implementation, focusing again on sub-regions, linking thematic

[98] This issue is particularly relevant for Africa. ICT support is likely to require support also for improved forest data and information, and ICT provides the opportunity for collecting basic information at lower cost

Table 7. ICT Applications for Forest Governance

Pillar of Governance	Suitable ICT Applications	Issues
Transparency, accountability, and public participation	• E-government and open data initiatives • Advocacy and awareness campaigns through text messaging and social networking sites • Community radio • Crowd sourcing to increase public participation • Collaborative and participatory mapping	• Most applications are based on the Internet and mobile phones, so they are technologically less challenging and cheaper to deploy. Cell phone applications are more useful in forested areas. • E-government and open data initiatives require legal and political support and are best led by government agencies. • NGOs and civil society can establish and manage mobile phone applications, community radio, and participatory mapping. • Costs to users/communities need to be offset through funding from donors or the private sector. Community radio stations can be set up for US$5,000–$15,000 and managed by community members. Short messaging services can be purchased at bulk rates from cell phone companies. • GPS capability is required for mapping applications. PDAs (US$800–$1,200) or smart phones ($150–$200) can be used, depending on how rugged the device has to be.
Quality of forest administration	• Forest cover and carbon stock assessment with CLASlite and airborne LiDAR • Real-time fire alerts through MODIS • Wildlife tracking and conflict management through mobile phone applications	• These applications are for government agencies. • Satellite imagery is now available at low or no cost, and recent developments have simplified software for interpretation. However, technical training is essential to interpret images and generate maps. • The LiDAR approach for carbon assessment is still in the early stages, and costs are estimated at US$0.10 per hectare. The Carnegie Institution for Science, Department of Global Ecology is the main provider of the LiDAR technology for forest cover and carbon assessment. • Cybertracker software is free to download onto PDAs and can be tailored for various uses, such as tracking wildlife, following the movement of logs, and locating specific tree species. This is a good technology for working in collaboration with communities. • MODIS and the Fire Alert system offer free text and e-mail services for fire alerts.
Implementation of forest legislation and the rule of law	• Technologies for surveillance and deterrence: computerized checkpoints and GPS tracing of vehicles • Technologies for tracking timber: chain of custody systems	• Comprehensive chain-of-custody systems are expensive operations, primarily useful where the benefits of legality assurance outweigh the costs, as in timber-exporting countries. The costs of these systems could be shared between industry and government, as benefits accrue to both. • Less expensive crime-reporting hotlines could be set up to work through voice and text messages. All crime-reporting systems must ensure citizens' anonymity and safety.

(*continued on next page*)

Table 7. ICT Applications for Forest Governance *(continued)*

Pillar of Governance	Suitable ICT Applications	Issues
	• Legal information management systems: Global Legal Information Network • Mobile and online crime reporting services	
Economic efficiency, equity, and incentives	• Online timber sales and auctions, licenses • Logistics	• These applications work well in situations in which the forest sector is fairly advanced in the use of information technology. While the government agency may have to pay to set up and maintain the applications in their initial phases, some services used by the industry—such as online auctions and inventory data—might include user fees to offset the costs to the public sector.

Source: Castrén, Tuukka and Madhavi Pillai. 2011. Forest Governance 2.0–A Primer on ICTs and Governance. Washington DC, Program on Forests (PROFOR)

areas to the governance and capacity building elements associated with each, and summarizing implementation mechanisms. Chapter 3 also emphasizes the importance of partnerships and knowledge: analytical work will often help to guide investments, in capacity building as well as in sustainable forest and woodland management.

II.6.1. Sustainable Production and Value Chain Development for Wood-Fuel and Charcoal Industries

Sustainable wood-fuel and charcoal systems would serve domestic, including urban, and potentially export markets. Such programs would involve clarification of rights and responsibilities for forest/woodland management and production, support for community-based forest management and farm (agro)forestry and incentives for reforestation. Different institutional arrangements may be needed in different countries, for example, government forestry departments taxing charcoal production and re-investing revenues into reforestation, or direct contracting arrangements between wood growers and wood fuel users or traders, as has been successfully implemented at large scale under the Plantar initiative in Brazil. Other enabling policies would include: (i) public commitment to public-private sector partnerships to encourage appropriate investment in renewable woodlots and efficient charcoal production technology; (ii) business support for small and medium enterprises involved in wood/charcoal production and marketing; (iii) strengthening communities' private land rights; (iv) adequate management of public lands to address open access and unregulated "free taking" since this is an economic disincentive to the development of a sustainable value chain..

For the taxation alternative to work, government institutions would have to be able to align charcoal quotas with local incentives, recover transport-based charcoal fees at checkpoints and through market regulations, and oversee transparent competitive charcoal transport operations. Such initiatives could also include incentives for the adoption of more efficient charcoal processing methods and improved cook stoves. The latter, apart from saving wood, can also reduce the expenditure of poor households on

charcoal, and enhance indoor air quality, key to improving the health of women and young children. Wood could be harvested from farmer managed, community or private-sector-owned woodlots, whether planted or naturally regenerated. Wood fuel is a relatively low-value product, and as a consequence it is often a by-product of trees grown and used for other purposes (e.g. "lops and tops" of trees grown for poles, and trimmings of hedges used as "live fences" to contain livestock). Therefore, interventions to increase sustainable wood fuel supplies should not just focus on trees specifically planted for that purpose, but also take into account the potential for generating wood fuel as a by-product of other (agro)forestry activities. Programs to improve charcoal and wood-fuel production and management, together with support for use of improved stoves, can potentially benefit women in particular since fuel-wood collection is predominantly the task of women, and the health impact of household pollution from wood-fuel use falls mainly on women and young children. Careful program design and targeting is necessary however.[99]

II.6.2. Landscape and Watershed Restoration for Enhancement of Productivity and for Flood Management and for Protection of Downstream Land and Infrastructure

Landscape restoration includes incorporation of trees in the production landscape and on adjacent sloping lands within a water catchment, for enhancement of soil fertility and agricultural productivity, and for direct production of tree products, for soil/moisture conservation and protection, and for biodiversity enhancement. Watershed restoration would include investment in trees and other non-structural and structural measures, in the context of infrastructure and mining investments, to prevent future and mitigate past damage, to prolong infrastructure life, and protect agricultural and urban land and ecosystem functions. Approaches could include incorporating these costs in the costs of new infrastructure, and "payments for ecosystem services" approaches.

Landscape restoration involves a range of locally adapted approaches. These include "ever-green agriculture," the incorporation of trees in the production landscape to enhance soil fertility, control erosion, and providing fuel, food, fodder, and other products. Country examples can be adapted to a wide range of ecosystems and have been included in Chapter 1 and earlier in Chapter 2 (as illustrated for Sudan, Niger, Kenya, Ethiopia). They include managed natural regeneration as well as planting of new trees, and may also include terracing on sloping lands (Rwanda) and support for "sustainable intensification" of crop production on the most fertile lands. Gender targeting would form an element of these programs, adapted to local circumstances.

These approaches can be adapted to a wide range of ecosystems. The WOCAT[100] study on sustainable land management provides a wide range of examples. Key supporting measures would include clarity regarding land and tree tenure, and decentralized technical support on adapted management technologies with local authorities and agricultural and forest specialists working together with local communities, as well as incentives to overcome the lag time between investments and productivity gains. They require a landscape approach, taking account of different land-use and ecosystem values in a watershed.

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[99] Gunnar Kohlin et al. 2012. "Energy, Gender and Development." Policy research paper 5800, Background paper for World Development Report on Gender and Development.

[100] World Overview of Conservation Approaches and Technologies. Successful approaches have been highlighted also in work by the Agro-Forestry Center, the Landscape Investment Forum, and in films such as *The Man who Stopped the Desert* (for the Sahel) and *Hope in a Changing Climate* for China, Ethiopia, and Rwanda.

Broader support measures include improved decentralized governance and incentives for value chain enhancement.

Watershed management interventions have both "private good" and "public good" benefits. Reforestation of degraded lands may help restore regular water flows and protect soil fertility, and water storage and hydropower facilities downstream. Also of importance is that reforestation may protect downstream homes and infrastructure from flooding and landslides even when the replanting programs themselves do not have a direct production benefit. Mangrove restoration can protect coastlines from storm surges and coastal flooding and provide spawning grounds for fisheries. Watershed restoration may include structural erosion and flood control measures as well. Examples of previously mentions broader watershed protection programs under preparation include those for Malawi and Cross-Rivers State, Nigeria. Broader support measures to conserve watersheds would include guidelines on infrastructure design, and participatory land-use planning, public awareness, and planning guidelines to manage and prevent development on land that is vulnerable to erosion.

II.6.3. Plantation Management and Establishment for a Range of Timber Products in Addition to Fuel-Wood, Including Building Poles, Construction Timber, Electricity Poles, and Furniture.

Policy measures would include support for the enabling environment for plantation investment, establishment, and maintenance, along with clarification of rights to land and to trees. Such measures may include incentives to overcome the barriers of "impatient capital," and the lack of availability of long-term finance in Africa. Policies and programs would be adapted to smallholder, community, and private sector investors.

In many African countries there are sizable areas of neglected government plantations which could be more productive if ownership were transferred (or management contracted out) to local actors: farmers, communities, municipalities, or timber companies. A transparent process for assessing the economic viability of these plantations and identifying potential managers prior to transfer, such as was carried out under the Forest and Environment Sector Program in Cameroon, would be an essential first step in enhancing the economic contribution of these plantations. In many cases, such plantations are inside government forest reserves, where the land tenure situation may be more straightforward and security of investments can be more easily guaranteed as a consequence.

Plantations can also be successfully integrated in landscape-scale watershed management and restoration programs. Strategic plantation investments include planting degraded hillsides alongside railways, roads and waterways, where initial investments costs can be justified by the public good resulting from the plantation—and where Payment for Environmental Services schemes may be feasible. In addition, many large-scale plantations protect considerable biodiversity inside the plantation matrix, especially if stream buffers and steep hillsides are maintained under native vegetation.

For larger scale private-sector investors the principles would follow those outlined in the paper "Rising Global Interest in Farmland" (see Footnote 67) and would include: (i) clarity regarding land rights, legislation and institutional responsibilities; (ii) potential available land identified; (iii) clarity regarding identification and transfer arrangements for land; (iv) clarity of procedures for investors; (v) land rights and authority well-defined; (vi) clarity regarding institutional roles; and, (vii) sensible, transparent

environmental and social safeguards. Good practice would involve benefit-sharing with local communities, outgrower schemes similar to those being adopted in Tanzania, and a long term commitment.

Smaller investors and communities are likely to need more technical support (such as locally appropriate, high-yielding planting material) as well as up-front financial support and assistance with logistics and marketing. Such support can often be provided most efficiently under private sector-managed smallholder outgrower schemes, as has been done in South Africa, and is also common for cash crops such as cocoa and rubber in countries such as Ghana and Côte d'Ivoire. In Central and South America, farmer organizations and cooperatives have been effective vehicles for supporting small-scale but high-quality plantation investments—with technical support provided by a combination of government services and paid forestry contractors.

Given the long time-scale of plantation investments and the perceived risks related to this, overall improvements in the private sector enabling environment are also important.

II.6.4. Increased Productivity and Sustainability in the Domestic Timber Value-Added Chain through Improvements in the Business Environment and Incentives to Improve Technologies and Reduce Waste, Legalize Timber, and Formalize SMMEs

The priority (discussed in the governance section) is to increase overall competitiveness through broader improvements in the business environment, including improvements in access to finance, energy, and infrastructure, and removing barriers to trade and to business registration, as well as support for open and transparent government reforms. Specific support measures to forest industries would include technical training, and may include incentives for use of improved, more efficient processing equipment. A key investment for helping SMMEs improve their performance is in wood drying kilns, which stabilize the wood, therefore making it easier to work as well as increasing the durability of the resulting wood products. Using dried wood is an absolute prerequisite for breaking into higher value-added products and markets, whether domestic or export. Drying kilns represent substantial investments and SMMEs would need to associate themselves to be able to afford them. Alternatively, a commercial operator could provide drying kilns as a service to clusters of SMMEs. Drying kilns can be run on wood waste and carbon finance can lower their investment cost.

Partnerships between large timber industries and SMMEs may play an increasingly important role here. This is already happening in Cameroon where local woodworkers are pooling their resources to contract French *compagnons* (skilled wood-workers) in order to receive training. Once SMMEs are formalized, it is easier for them to get access to finance and other support services. Standard methodologies for identifying barriers to formalization exist and could be put to good use in the forestry sector. Broader measures to increase incentives for formalization and to improve the business environment could then be identified and implemented. Such programs would involve partnership with the Finance and Private Sector Development Unit.

II.6.5. Protected Area Management and Biodiversity Conservation

Key areas of focus include landscape planning, management planning, development of sustainable financing mechanisms for protected areas, eco-tourism promotion, and community based natural resource management. A biodiversity strategy for Africa is under

preparation, and will highlight the contribution of natural ecosystems to development and economic growth in Africa.[101] Integration of forest biodiversity conservation with sustainable forest land-use planning is quite well understood; forest management plans generally include mosaics of land use for protection, conservation, and sustainable management purposes.

As for sustainable forest management, integration of protected area land-use planning with land-use allocations made by other sectors for mining, energy, or infrastructure development would be an area of focus. And since adequate financing for existing protected areas has proved especially problematic, the Action Plan would take advantage of opportunities for financing biodiversity offsets as part of infrastructure and mining development schemes as well as potentially for "payment for ecosystem services" schemes.

II.6.6. Improved Forest Concession Management

Improved forest concession management in heavily forested countries could include creation of an enabling environment for competitive and transparent concession management, participatory land use planning, public sector oversight and civil-society based monitoring systems, benefit sharing, enforcement of social contracts and implementation of Voluntary Partnership Agreements (VPA) and other legality initiatives and certification schemes. One specific area will be facilitating business linkages between large-scale timber industries and local SMMEs. Implementation support for VPAs should not only be limited to export-oriented concessions, but should also include domestic markets. Adequately funded, transparent and accountable forest institutions are key to this agenda.

Improvement of the policy framework for, and management of, timber concessions generally involves increasing transparency and competition in the concession allocation process; ensuring that all companies eligible to bid for concessions have the operational, technical and financial capacity to manage forests and process timber; requiring concessionaires to produce both long term management and annual harvesting plans and ensuring that these are publicly available; ensuring that commercial timber activity benefits the nation (through effective collection of taxes) and the local communities (through social responsibility contracts and partial retrocession of taxes); and finally ensuring that forest management laws and regulations are respected through reinforcing government capacity and the deployment of independent observers. In post-conflict countries such as the Democratic Republic of Congo and Liberia, this was preceded by a legal review of all concessions by a multi-stakeholder panel, with concessions not meeting the legality criteria declared null and void, to level the playing field. Bank interventions on this issue can take various forms, including development policy operations (Cameroon and Gabon), economic and sector work (Liberia), investment operations (Ghana, DRC), and technical assistance financed under the HIPC initiative (CAR, Congo) or multi-donor trust funds (DRC).

Key supporting measures would include policy dialogue with the finance as well as the forest ministries, legal assistance for the necessary adjustments to laws and decrees, technical support for installation and initial operation of log and timber tracking equipment, assistance in putting in place new financial mechanisms (e.g. for local tax sharing) and the

[101] The expected three pillars of the Africa Biodiversity Strategy would be (i) enhancing the focus and targeting of dedicated biodiversity conservation projects; (ii) mainstreaming biodiversity conservation more broadly within Bank-supported investment projects; and (iii) incorporating biodiversity considerations more fully within the pre-investment planning, policy analysis, and other "upstream" advice that the Bank provides to African member governments.

institutional reforms needed to make these mechanisms work. Capacity-building activities cover not only government but also other stakeholder groups, especially civil society and local communities, for example, in DRC where the Forestry and Nature Conservation Project supports a commercial/NGO consortium to help facilitate negotiation of social responsibility contracts. Broader support measures could include more general improvements in governance and accountability, such as the introduction of results-based planning and budgeting in the Forest Ministry, and strengthening of the judiciary, as well as improvements in forest land use planning, (e.g. through participatory zoning exercises).

II.6.7. Development of REDD+ Mechanisms and Carbon Finance

Development of REDD+ (reduced emissions from deforestation and forest degradation) mechanisms and carbon finance, to help African countries capture potential revenues from the carbon value of forest and woodland restoration and conservation schemes, but also to ensure benefit sharing with local communities and promote co-benefits. Bio-Carbon Fund support for landscape restoration and reforestation/afforestation projects would be expanded both because of the opportunities these present for innovation and learning about future clean development mechanisms (CDM), and because the financial support helps to increase financial attractiveness of these operations. Watershed restoration may involve working with a wide range of actors across sectors.

Sections I.3.4 and II.3.3 have highlighted the role of forests and woodlands in climate mitigation and given country examples of on-going work in Africa, mentioning that 17 African countries are now "getting ready for REDD+." Section II.3.2 also highlighted the challenges, including managing expectations and capacity constraints. The expectation is that countries will be able in the future to benefit from substantial flows of climate finance funding for the contribution that their forests and woodlands make to climate change mitigation. REDD+ readiness involves a number of institution building, governance strengthening, and information systems elements, including: (i) analytical work on the drivers of deforestation; (ii) development of REDD+ national strategies; and, (iii) establishment of robust monitoring, reporting, and verification frameworks. These readiness activities are accompanied by stakeholder consultations and outreach to ensure transparency, inclusiveness, and broad ownership and it is understood that REDD+ strategies should provide benefits for local communities and indigenous peoples. These "readiness programs" are helpful but bring with them substantial administrative and transaction costs, which may burden local organizations already stretched to deliver basic services to citizens. Expectations regarding future funding availability are high and may also need to be managed over the next five years.[102]

Section II.33 also described the FIP (forest investment program) which supports countries' efforts to reduce deforestation and forest degradation, and promotes sustainable forest management, providing up-front financing for readiness reforms and investments in REDD+.[103] The Bio-Carbon Fund and other carbon finance mechanisms complement the REDD+ work, providing important experience on the ground in assessing the carbon sequestration potential of different afforestation, reforestation, and sustainable land management approaches and in MRV, as well as providing complementary financing to increase the financial attractiveness of these investments. The Bio-Carbon Fund also

[102] The Climate Green Fund is intended to be the main climate finance mechanism but its modalities of operation, governance structure, and overall level of funding are still under discussion and it will take some years to become operational.

[103] The section also mentioned the recent creation under FIP of a dedicated grant mechanism for local communities and indigenous peoples, which will be operational in the three African FIP countries.

provides opportunities for working with private sector stakeholders. It should be noted that at least in the short-run, and as Brazil has acknowledged with its Amazon Basin Fund, most funding in the next years is likely to come from public sources and foundations, rather than from carbon markets. And local benefits, gender targeted as appropriate to particular local circumstances, must remain the primary justification for any investments.

The Bank would work with country stakeholders and other partners to continue to build the capacity of African countries to access REDD+, carbon finance, and related climate finance from development partner and private sector sources for implementation of activities which support climate change mitigation through reduction of deforestation and forest degradation, and forest and woodland restoration, while benefiting local communities and protecting forest ecosystems.

As emphasized in the Africa Strategy and throughout this paper, improved institutional capacity, governance and accountability are priorities cutting across all thematic areas, and need to be incorporated in all activities as core elements. One area of institution building that would receive particular attention would be ICT (information and communication technology), and e-transformation, not only at national but also at decentralized levels.

Modern information and communication technology supports innovation and can help achieve better development outcomes, in particular more efficient, transparent, and accountable administration and public service delivery. There is also an urgent need to improve the availability and quality of information (e.g. statistical data) in the sector. Information systems can only be as good as the data the system uses.

Chapter III

Strategic Action Plan

III.1. Introduction

Priorities for Bank engagement have been developed to take account of sub-regional opportunities but also to reflect the core pillars of a number of key strategic Bank documents. Specifically they take account of:

1. The principal themes of the Africa Strategy, which include the pillars of jobs and competitiveness, risk, and resilience based on the foundations of improved governance and capacity;
2. The 2011 draft Bank Energy Strategy, in which one of the five key pillars for Africa is to support sustainable biomass supply and use while reversing forest and woodland degradation;
3. The 2011 draft Environment Strategy, which emphasizes the role of forest and landscape management in green development agendas;
4. The Africa Climate Resilient Development Strategy as well as Bank-wide climate related work, which addresses the role of forests and woodlands in both low carbon (mitigation) and resilient (adaptation) growth paths;
5. The Agricultural Action Plan 2010–2012, which highlights the inter-connections between agriculture, food security, climate change and forests, and includes pillars to address risk and vulnerability, and enhance environmental services and sustainability, where forests, agro-forestry and woodlands play a key role;
6. The 2002 World Bank Strategy "Sustaining Forests" which emphasizes the role of forests in economic development, poverty reduction and protection of global public goods;
7. The Governance and Anti-Corruption strategy and the ongoing work on EITI++ (Extractive Industries Transparency Initiative);[104]

[104] Forestry is not an extractive industry since it deals with sustainable management of a renewable resource, rather than a sub-surface, non-renewable resource. Some of the principles behind the initiative, however, are applicable to forestry

8. Forest Governance and Information Technology;[105] and

9. Ongoing work on Land Rights, the Doing Business Environment, the IFC Agri-Business Strategy and Forest Strategy.[106]

Implementation of the Strategic Action Plan on forests would take advantage of the Bank's strong country presence and engagement in country dialogue, as well as its convening power, its analytical and operational strengths, its global knowledge and role in emerging global agendas. At country level there is strong engagement not only with the client but also with development partners, researchers and civil society organizations. Of particular importance is the Bank's engagement in areas outside as well as inside forests and woodlands (public sector management, governance and capacity building, finance and private sector development, decentralization, poverty reduction as well as sectoral engagement), which are relevant to and strengthen the forest and woodlands agenda.

Chapter 1 highlighted the importance of forests and woodlands to the Africa development agenda (why forests are important) and also identified key challenges and opportunities. Chapter 2 summarized the forest portfolio and present and future thematic areas of work, grouped within the Africa strategic pillars, along seven primary "business lines" (what the main priorities for investment and governance/capacity building should be). Chapter 3 summarizes key implementation mechanisms and presents an Action Plan around the key business lines by sub-region, recognizing the regional diversity of Africa's forests and woodlands.

The proposals take into account the constraints posed by the need to focus on fewer, larger operations in a time of budget constraints, and on the potential for working cross-sectorally to achieve maximum development impact. They also reflect the opportunities of the new climate-related funding instruments and the global public goods funding provided through the GEF, but emphasize the need to manage expectations in this regard. In almost all cases there is a strong country development argument for enhanced investment in woodlands, forests and agro-forestry.[107]

The proposals focus on the two core pillars of the Africa Strategy, jobs and competitiveness and enhanced resilience and risk management, with the underlying foundation of improved governance and capacity. There are strong inter-linkages between the two pillars with many proposed priority interventions addressing both. They also reflect the three core elements of implementation: partnerships, knowledge building and finance; again there are inter-relationships between these elements.

III.2. Partnerships and Knowledge

The Africa Strategy emphasizes the importance of partnerships and knowledge as key to strategy implementation. These are closely inter-linked in implementation of the Forest

[105] Castrén, Tuukka and Madhavi Pillai. 2011. Forest Governance 2.0–A Primer on ICTs and Governance. Washington DC, Program on Forests (PROFOR) available at http://www.profor.info/profor/knowledge/information-management-and-forest-governance.

[106] The IFC Forest strategy was presented to the Board in June 2010.

[107] The plan does not include IFC: IFC's strategy was articulated in a plan presented to the Board in 2010 and there is informal collaboration between IFC and Bank staff in many areas. A Forest Investment Forum held in Nairobi in May 2010 also highlights private sector investment opportunities. However provision was not made at concept stage for Bank/IFC collaboration in elaboration of this document.

Strategic Action Plan, in particular to the "underlying foundation" of enhanced governance and capacity. Many partners also make an important contribution to analytical work in the region, strengthening the knowledge base for improved forest management, and building stakeholder ownership and understanding for this. African research and knowledge-based organizations need to play a key role in development of analytical and knowledge products, and they need strong country ownership and dissemination strategies to be effective. Partnerships specific to forests, woodlands and trees include:

- The CGIAR (Consultative Group on Agricultural Research) has a long-standing partnership with the World Bank and has started implementation of a Core Research Program (CRP 6), to be implemented over five years on Forests, Trees and Agro-Forestry, whose aim is to generate knowledge in support of enhancing the contribution that sustainable management of forests, agro-forestry and trees make to production and incomes; conserving biodiversity; maintaining ecosystem services; reducing GHG emissions and enhancing carbon stocks; and global trade governance;

- PROFOR (The Program on Forests), financed by eight development partners, aims to advance the agenda of "sustaining forests for all" through supporting analytical work and knowledge sharing on four critical areas: improving peoples' livelihoods, enhancing forest governance; financing sustainable forest management; and coordinating forest policy with other sectors. The Bank administers PROFOR with other partners, in particular FAO and the EU (which also supports the FLEGT initiative). PROFOR is currently supporting work on the drivers of deforestation in Central Africa, and supported a Forest Landscape Investment Forum in Nairobi in May 2011. Analytical work, strengthening the knowledge base, will form a key element of the Action Plan and PROFOR will play an important role in this. PROFOR supported recent analytical work on the fuel-wood and charcoal industry in Tanzania recently, for example, and the recommendations from that work formed the basis for an initiative supported by Swiss co-operation;

- **South-south learning:** areas such as forest management including community forest management (Brazil with DRC), and watershed/landscape restoration (China with Rwanda);

- **A number of development partners support forest programs in Africa. The African Development Bank is a key development partner in the forest and woodlands area.** FAO is a key technical collaborator. Also the EU and a number of bilateral donors, including the governments of Germany, Norway, UK and U.S. are key partners. Some have a particular focus on participatory land use planning, nature conservation, or citizen monitoring. A number of foundations are increasingly involved in the forest and natural resource management agenda. Information provided by the Development Assistance Committee (DAC) on OECD country programs of assistance to forestry in Africa highlights the support given to forest governance and capacity building;

- Improving **REDD readiness** is a collaborative effort between several tropical forest countries and development partners, especially Norway, the UN organizations, and the bilateral donors funding the Bank-managed climate change trust funds (FCPF, FIP) to build capacity to access future funding mechanisms

which address forest degradation and deforestation. The FCPF (Forest Carbon Partnership Facility) is supporting 14 African countries to improve REDD readiness and access future climate finance. Readiness work includes analytics on the drivers of deforestation, carbon stocks and sequestration potential, development of monitoring, verification and reporting mechanisms (MRV) and development of governance and institutional capacity to administer REDD. Within the Bank, a number of knowledge platforms are under development, including the Ecosystems Accounting Platform and the Green Growth Platform, which may contribute to a greater understanding of the economic contribution of forests, woodlands and trees to a green growth agenda in Africa;

- **The FLEGT (Forest Law Enforcement Governance and Trade)** initiative spearheaded by the EU works through Voluntary Partnership Agreements (VPA) with wood producing countries (e.g. Ghana, Cameroon, CAR, DRC, Republic of Congo and Liberia) to ensure the legality of timber exported to Europe. While its main focus is on the Voluntary Partnership Agreements between the EU and producer countries, it also aims at including issues related to domestic markets;

- **Sustainable forest management certification** schemes like FSC (Forest Stewardship Council) and PEFC (Program for the Endorsement of Forest Certification) work to ensure that forests are sustainably managed according to key social and environmental criteria. Several countries in Africa have made substantial progress in this regard;

- **There is also scope to use African mechanisms for (sub-)regional cooperation** to enhance knowledge (as with COMIFAC which is developing common methodologies to the assessment of the drivers of deforestation and assessment of carbon stocks), or to increase the effectiveness of investments (as with the Lake Victoria Basin Commission, where through a regional operation the basin countries are investing in watershed management and protection). The African Union's CAADP (Comprehensive African Agricultural Development Program) includes a pillar on sustainable land and water management, and the AU is committed to incorporating climate considerations into natural resource development strategies;

- **Emerging climate-related instruments** such as the FCPF (Forest Carbon Partnership Facility) which aims to help countries develop systems and policies for addressing reduced emissions for deforestation and degradation (REDD+), complementing the UNFCCC negotiations by demonstrating how REDD+ can be applied at country level and facilitating access to finance as new climate-related instruments are developed. Fourteen African countries are participating. The Bio-Carbon Fund is also helping generate knowledge through support for specific investments;

- **The TerrAfrica Knowledge Platform,** financed through GEF has documented a wide range of good practices on landscape restoration, agro-forestry and forestry. GEF also financed through TerrAfrica US$150 million of investments in sustainable land management. GEF is now supporting development of the Great Green Wall Initiative in the Sahel, a program that will support further landscape restoration in the Sahelian region. GEF will provide over US$100 million in funding, to be co-financed with other source of finance;

- The Climate Investment Funds include strong knowledge generation elements, as well as providing valuable investment support. (FIP is working in Burkina, DRC and Ghana and the PPCR program in Niger includes support for farmer managed forest regeneration);[108]

- **Foundations are also playing an increasingly important role;** the Carbon War Room, for example, brings together global entrepreneurs, facilitated by Richard Branson, to tackle obstacles to achieving a low carbon economy. The Bill and Melinda Gates Foundation is involved in agricultural research and rural finance. Local NGOs are playing an increasingly important role, while international NGOs such as IIED (International Institute for Environment and Development) undertakes research in natural resource management, Eco-Agriculture Partners has piloted work on landscape restoration with AGRA (Alliance for a Green Revolution in Africa). Environmental NGOs and research bodies such as WRI (World Resources Institute), WWF (World Wildlife Fund), and Conservation International are all active with local partners.

- **Private sector partners involved in forestry and tree-crops:** many are committed to sustainability and working with local communities. Unilever, for example, is involved in smallholder cocoa and tea plantation management, and the Commodity Roundtables bring together major private sector partners around key sustainability goals.

Partnerships are essential. It must be acknowledged nevertheless that some do pose challenges for implementation in capacity-scarce countries, especially where different partners and trust funds have different and specific reporting requirements. Partners are working to harmonize these, but also face their own challenges because of the specific requirements of their governments and accountability mechanisms.

III.3. Governance and Capacity-Building

Chapter 2 has highlighted on-going work on governance and capacity building, and the key elements that pose challenges and need to be addressed. It highlighted the need to align institutional capacity, governance arrangements and financing. With regard to investment support,[109] enhanced governance and capacity would effectively be addressed through three main types of interventions:

1. In part by sector specific operations, but in part also through broader operations which strengthen public sector management and accountability, budget management and decentralized government structures, and which improve the enabling environment for private sector investment and formalization, which facilitate trade and transport and its governance, and which improve land rights regimes. Generation of reliable information, and dissemination of information, would form a key element in this process. As highlighted in Chapter 2 information technology has an important role to play;

[108] FIP will also include a grant mechanism to be directly managed by forest dependent communities and indigenous peoples' groups.

[109] Investment in this context needs to be interpreted broadly, including and focusing on "soft" investment in human and institutional capacity, information systems and governance, as well as more traditional "hard" investments.

2. Through improving decision-making processes for other investments, in particular in mining, transport, and hydroelectric energy, but also in urban development, so that included in the costs of these investments are programs to maintain the ecosystem services that forests and woodlands provide which "internalize externalities" and recognize the value of renewable natural capital. This concept is a core element of the green growth approaches that are being developed by a number of development partners including the World Bank. The improvements would be implemented through support for strengthening country-specific environmental policies and assessment procedures, together with support for implementation through capacity prioritization in development planning and capacity building. The "instrument" would be through broader public sector capacity building operations or DPLs, and sector-specific DPLs or investments;

3. Through support for enhanced regional cooperation on particular technical and policy interventions. The Lake Victoria Basin Commission is supporting common approaches to watershed restoration, for example, and COMIFAC is developing common approaches to REDD among the Congo basin Countries.

III.4. Priority Areas for Financial Support by Sub-Region

Chapter 2 has summarized the seven key thematic business areas for support. This paper has highlighted the regional diversity of forests and woodlands in Africa, and the need for an Action Plan that is differentiated by sub-region. The following paragraphs lists priorities by sub-region, together with proposed implementation mechanisms. The matrix at the end of the chapter summarizes these, grouped into the major strategic themes of the Africa region: jobs and competitiveness, risk reduction and resilience, with the underlying foundation of enhanced capacity and governance. The matrix also proposes implementation mechanisms. All programs would be implemented within the framework of country partnership strategies, taking advantage also of the opportunities for innovation offered by the global public goods agendas.

III.4.1. Sahel

There are three priorities for the Sahelian countries:

1. Scale up support for sustainable wood-energy production;

2. Scale up support for participatory woodland management and agro-forestry;

3. Support value-chain development in biomass energy, timber and non-timber forest products.

The first two priority areas tackle the risk and resilience and jobs and competitiveness agendas together, while the third priority area focuses largely on jobs and competitiveness.

Financial support mechanisms could be through:

- Addition of dedicated mechanisms in broad-based existing operations (such as the Burkina Decentralized Development Program or the Mali Rural Development Program) for the first two areas;

- Self-standing natural resource management operations working through decentralized structures;
- Scaling up existing operations (Such as the Senegal Sustainable and Participatory Energy Management project);
- Private sector development and value-chain enhancement operations for the third area;
- New global and climate financing instruments, such as the Sustainable Renewable Energy Program (SREP) for Mali, the Forest Investment Program (FIP) for Burkina Faso, the Pilot Program for Climate Resilience (PPCR) leveraged by IDA funding or the Global Environment Facility (specifically the West Africa and Sahel Program, which is specifically targeted at re-greening the Sahel through participatory forestry, agro-forestry and agro-silvi-pastoral approaches);
- Support for specific policy reform measures through development policy lending (as was successfully achieved in Senegal when charcoal sub-sector reforms were supported through an energy sector DPL).

III.4.2. Humid West Africa

The priorities vary by country and include:

1. For Ghana, support for sustainable management of the domestic timber industry for jobs and competitiveness through value-chain enhancement and restoration of the resource base. Value-chain enhancement would include technical support for processors to reduce wastage and enhance product quality, and broader support for the SMME enabling environment. Restoration of the resource base would include reforms at local level to provide for more consistency between resource and revenue management and control, effective community management, tenure reforms, fiscal incentives for more sustainable management of the small-scale logging industry, inventory management, and reforms in forestland leasing to improve the enabling environment for plantation forests. The sector-wide reforms supported through DPLs need grass-roots capacity-building, local governance reforms and landscape restoration to address the core issues. There are similar challenges in Nigeria but they may best be addressed through state-level interventions. There is longer-term potential also in Côte d'Ivoire once the situation stabilizes;
2. For all countries, much greater support for effective decentralized and community forest and woodland management, following the Sahel model;
3. Support for agricultural productivity and agro-forestry, including smallholder tree-crop plantations in all countries. This will be key to reducing deforestation and therefore to REDD+. Contractual arrangements where support for farming and cocoa plantation rehabilitation is provided in return for forest protection services could be an option;
4. A particular focus on coastal mangrove and wetland restoration for Guinea, Guinea-Bissau and parts of Sierra Leone and Nigeria, to support both fisheries (jobs) and coastal protection (resilience);
5. Support for watershed protection and erosion control.

The first three focus on jobs and competitiveness and the second two on risk and resilience, though there are strong inter-linkages.

Financial support mechanisms could include:

- For countries like Ghana a broad mix of support through development policy operations combined with investment support, as has been followed in the agriculture and fisheries sectors. The recent support exclusively through the DPL instrument in forests may have contributed to lost opportunities in development of effective decentralized, community forest management approaches;

- For small-holder plantation establishment, use of mechanisms similar to the Out-Grower Value Chain Fund mechanism recently established with support of development partners including Agra and KFW,[110] to smallholder and small business organizations, to local land bank initiatives, and appropriate incentive structures for investment in improved timber harvesting, processing and value-chain development;

- IDA, GFDRR and GEF support for coastal zone protection including coastal mangrove protection and protection of high value forests;

- Support for protection of water-towers through IDA operations as well as through components of new hydroelectric energy investments;

- The FIP (Forest Investment Program) and REDD readiness mechanisms (FCPF) which are available for Ghana provide opportunities for improved forest and woodland management and information systems and, when leveraged with financing from other sources including IDA, could be models for other countries.

III.4.3. Central Africa

In this sub-region the economic, social and environmental importance of forests is widely recognized and there is an active program. Priorities moving forward vary by country according to capacity and population pressures. They include:

1. Support for private sector development for value-chain enhancement for domestic timber processing and forest eco-tourism, and support more broadly to an enabling environment for private sector development including growth poles (Gabon, Cameroon and Central African Republic), as part of broad economic diversification strategies;

2. More effective approaches to decentralized forest management and forest revenue management by local communities (Cameroon, DRC, Central African Republic), with special mechanisms to support the livelihoods and rights of indigenous peoples;

3. Sustainable wood energy management, agro-forestry and farm forestry including plantations especially around major urban areas (DRC, Republic of Congo, and Northern Cameroon);

[110] AGRA, The Alliance for a Green Revolution in Africa, is a foundation established with the support of Kofi Annan whose objective is to help realize the agricultural potential of high potential areas in Africa. It works to increase the productivity and resilience of smallholder farmers and livestock through integrated programs in improved seed, soils, water, market access, innovative finance, and partnerships.

4. Continued monitoring of and capacity building to support enhanced transparency and sustainable management of concession forests for economic and social benefits;

5. Leveraging support for improvements in the policy environment in other sectors (specifically mining and transport but also energy) to enhance sustainable forest management;

6. Broad-based support for preparation and implementation of REDD plus strategies;

7. Continued support for nature conservation;

8. Support for forest management through other sector development programs, in particular through mining governance reform, and in infrastructure development programs; these investments could also support biodiversity and carbon offsets.

The first four priority areas address jobs and competiveness and enhanced risk and resilience together, while the last four focus more on resilience and risk management.

Financial Support mechanisms would include:

- Investment support to facilitate implementation of value-chain approaches, wood-energy, community forestry and capacity-building for enhanced forest governance;

- DRC has been selected as FIP country, facilitating implementation of programs to reduce emissions from deforestation and forest degradation with local co-benefits;

- Support through grant mechanisms to REDD readiness, including regional cooperation in development of methodologies and sharing of experience through COMIFAC (Commission des Forêts d'Afrique Centrale);

- Central Africa should also take advantage of GEF opportunities to scale up support for nature conservation.

Because of the global importance of the Congo Basin Forests in climate change mitigation, there is long-term potential for the Central African countries to benefit from up-scaled financing for REDD. Commitments of US$1 billion to Brazil and Indonesia have been made, for example (though while for Brazil governance and disbursement mechanisms have been put in place, for Indonesia progress is slower). But broader support for development of functioning institutions in the post-conflict countries will also be necessary.

III.4.4. East Africa

Priorities include:

1. Support for broad landscape restoration through agro-forestry, erosion control measures and watershed management (Ethiopia, Kenya, Uganda, Rwanda, and Burundi);[111]

[111] Eritrea and Somalia are not addressed since there has not been an active program in natural resource management in these countries for some time. These sorts of measures would likely be a priority should active engagement resume.

2. Support for an improved enabling environment, including technical and financial assistance, for community plantation establishment, larger scale plantations involving community participation and out-grower schemes, and continued improvements to the enabling environment for sustainable private sector management of government plantations (Kenya, Tanzania, Uganda, and Ethiopia);

3. Support for improved biomass energy production, efficiency, value-chain enhancement and marketing especially within 200 kms of major cities, through support for community forest management and plantation establishment, improvements in kiln technologies and regulations surrounding these, checkpoints to monitor charcoal transport and marketing posts and infrastructure, and dissemination of improved stoves. (Tanzania, Uganda);

4. Support for forest protection for nature conservation and nature-based tourism (Tanzania, Uganda, Rwanda) and for watershed protection (all countries), in cooperation with local communities.

For all of these areas there are very strong inter-connections between the two "pillars".

Financial support mechanisms could include:

- Support through ongoing or planned watershed management and agricultural operations, which would include specific support measures to scale up investment in agro-forestry (e.g. Lake Victoria Environmental Management Program, Rwanda Land Management, Water Harvesting and Hillside Irrigation Program, Kenya Natural Resources Program, Ethiopia Sustainable Land Management program) as well as plantation establishment and management;

- Specific support for biomass energy production (including the charcoal production, processing, transport, and marketing chain) as part of natural resource management or rural energy access operations; in this regard Kenya and Ethiopia are both SREP countries;

- Development of REDD mechanisms to assist financing of the first two priority areas. The carbon market also has a growing role to play and there are successful pilots in a number of countries;

- Payment for environmental services, for example for watershed protection for delivery of good quality water to urban populations, or for protection of hydrological infrastructure.

III.4.5. Southern Africa

For Southern Africa the priority areas include:

1. Farmer-managed agro-forestry and farm forestry in the production landscape using decentralized approaches (all countries);

2. Support for enhanced enabling environment for responsible private sector investment in smallholder and plantation forestry (Mozambique);[112]

[112] And possibly Zimbabwe when the country program scales up

3. Watershed management (Malawi, Madagascar, Lesotho);

4. Enhanced protected area management and eco-tourism development (Madagascar, Mozambique, Zambia, Botswana, Malawi), including coastal mangrove protection;

5. Enhanced forest management as part of investments in other sectors (mining, roads, and energy) specifically in Mozambique, Malawi and Zambia, and, for Mozambique in coastal areas along coastlines.

The proposed activities very much inter-twine jobs/competitiveness and risk/resilience.

Financial mechanisms would include: support through IDA operations leveraged by REDD and GEF financing mechanisms.

III.4.6. Regional Cooperation

There is scope for scaling up support for (sub-)regional cooperation, specifically:

- Using regional institutions in cross-country learning: Learning from the COMIFAC countries which are collaborating on a range of REDD-related issues, including development of common methodologies, project piloting and allometric measurement approaches;

- Scaling up existing regional programs that address watershed management, (Lake Victoria Environment Management Program, proposed Lake Malawi program);

- Using transport and trade facilitation projects to improve cross-border governance and cooperation in forest governance (West Africa, and Central Africa to East Africa corridors);

- Support for international processes such as FLEGT where these are applicable to African countries (e.g. Ghana and the Congo Basin countries) and specifically working on potential for adapting these approaches to domestic and sub-regional markets.

III.5. Staffing and Budget

Bank budgets are determined through the country programming and budget/regional exercise. Global public goods budgets for GEF and the Climate Investment Funds, though not for the Bio-Carbon Fund or the Forest Carbon Partnership Facility, are set by priorities set outside the region. The global and local public goods agendas and budgets are closely linked, however, since it is widely recognized that global programs need local ownership and will not succeed without bringing local benefits.

Given the overall budget constraints, this paper does not attempt to estimate budget requirements. A key point, however, is the priority the Action Plan attaches to multi-sectoral collaboration, and to meeting the forest agenda in many cases through operations that are led by other sectors, but to which forest and natural resource management staff provide technical and strategic input. A second point is the knowledge agenda: adequate funding for analytical work, undertaken in partnership with country-based knowledge

institutions, plays a key role in developing a sound basis for programs of reform and improved forest management based in the lessons of experience and adapted to changing circumstances.

Consistent with the Africa Strategy, staff decentralization will continue to be pursued, in order to build country-based partnerships and ensure that programs are embedded in country priorities. Given the multi-sectoral nature of the operations, many staff will have integrative skills as well as a strong background in natural resource management. Staff with multi-regional experience will be well placed to take advantage of global knowledge sharing and help build partnerships with other regions.

The Bank Africa Region also intends to build hubs, and there will be opportunities to staff those hubs with more specialized personnel. Skills in geographical information systems, technical aspects of forestry and forest and woodland management, agro-forestry, watershed management, land use planning, forest economics, as well as experience in working with a range of stakeholders and practical problem solving will be needed. Other units are likely to provide experience in areas such as private sector development, public expenditure and broader public sector management/governance, ICT, and land administration. Cross-support will also be sought from outside the region to continue to supplement Bank-funded staff with staff funded through cooperative arrangements with other development partners

III.6. Conclusion

Forestry in Africa has often been viewed much too narrowly as either a source of export revenues from either industrial timber on the one hand, or on the other hand as an issue of global public goods. In reality, forests and woodlands play a much broader, two-fold role: first, as a diverse source of jobs and livelihoods for African economies and citizens, and, second, as a provider of ecosystem services —protecting watersheds and stream-flows, controlling erosion and enhancing fertility, regulating the climate, and protecting biodiversity. Export revenue and global public goods are important but a relatively small subsets of these broader roles.

Moving forward, an Action Plan consistent with the Africa Strategy needs to focus on forests and woodlands as a provider of household energy and as the source of employment from a vibrant, largely domestic but also export-oriented wood industry. The Action Plan should outline the importance of providing enabling environments for farmers to invest in trees as part of farmland restoration, and support forest-based eco-tourism; address deforestation and forest degradation, which carry heavy economic costs and reverse the erosion and watershed degradation that result in crop failures and power outages; and take advantage of the opportunities for forests to contribute to the global public goods agendas, particularly in regards to climate change mitigation and biodiversity conservation.

Action Plan implementation requires the building of local institutions, information systems, and capacity for transparent governance at the decentralized as well as central levels by taking advantage of new opportunities provided by information and communications technology. All actors—local stakeholders and civil society as well as development partners and the private sector—will need to be taken into consideration in the planning and

implementation of the Action Plan. The key is to work cross-sectorally to address country-specific development challenges. Better managed forests, tree, woodlands, and the products and services they support have great potential to contribute to the objectives of the Africa Strategy; potential that should be harnessed for the future of the continent.

Forest, Trees and Woodlands Action Plan for Africa: Summary Matrix

	Pillars			
	Jobs and competitiveness	**Resilience and risk management**	**Governance and capacity building**	**Implementation mechanisms**
Sahel	• Community based woodland management for energy, fodder & NTFP production • Agroforestry and trees in production landscape • Value chain enhancement in biomass energy, timber and non-timber forest products	• Sustainable land and water management, including landscape restoration and agroforestry for enhanced food security	• Strengthened decentralized & deconcentrated institutions, information dissemination and accountability • Improved enabling environment for forest/agroforestry carbon financing (including REDD+ and CDM), through policy, legal and institutional reforms, such as enhanced cross-sectoral coordination and innovative mechanisms for local benefit sharing. • Enhanced enabling environment for responsible private sector investment and SME development • Improve forest and woodland information collection and management and enhance use of ICT	• Self-standing Natural Resources Management operations: support for decentralized structures, support for specific policy reforms. Scaling-up successful operations, • Mainstream (agro) forestry in other sectoral operations: mainly energy and agriculture and private sector development. • Global funds: GEF, new climate funds (FIP in Burkina Faso and PPCR in Niger) • ESW on how to safeguard and enhance social safety net function of (agro)forest resources
Humid West Africa	• Upgrading of domestic timber and charcoal industry through value-chain enhancement • Continued support for improved concession management • Technical and organizational support for processing operators (cf. reduction of wastage and enhancement of product quality) • Measures to ensure adequacy between forest resources and timber processing capacities • Community-based forest and woodland management	• Conservation and sustainable management of coastal mangroves and restoration of wetlands, • Support for Watershed Protection (especially those essential for hydropower and for safeguarding transport corridors) and to erosion control including through payment for environmental services where appropriate • Support for Nature conservation, including through landscape restoration to link up fragmented habitat. • Taking advantage of REDD opportunities	• Enhanced monitoring, transparency and sustainable management of production forests including legality assurance needed for FLEGT in countries having signed Voluntary Partnership Agreements (VPA) with the EU (Ghana) or in the process of negotiating these • Tenure reforms, including reforms in forest land leasing to improve the enabling environment for plantation forests • Private sector enabling environment, with a particular focus on SMEs (including simplification of regulatory framework and fiscal reforms)	• Stand-alone operations on Natural Resources Management, whether development policy operations or investment support, including support: to effective decentralized, community level forest management schemes; small-holder plantation establishment (through mechanisms similar to the Out-Grower Value Chain Fund mechanism), watershed management. • Mainstream SFM in other sectoral operations: i.e. support for protection of 'water-towers" through components of new hydro-electric energy investments. • Proposed AFTEN/FPD (agro)forest plantation business facilitation initiative

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	Pillars			
	Jobs and competitiveness	**Resilience and risk management**	**Governance and capacity building**	**Implementation mechanisms**
Humid West Africa	• Improve agricultural productivity and agro-forestry, through support for small-holder tree-crop plantations—in association with large-scale producers where appropriate (Ghana and potentially Cote D'Ivoire and Nigeria). • Improve forest governance in all countries, but especially in those having signed Voluntary Partnership Agreements with the EU under Forest Law Enforcement Governance and Trade (FLEGT) initiative (Ghana) and those who have subscribed the forestry sector to the Extractive Industries Transparency Initiative (EITI), such as Liberia,		• Improved enabling environment for forest/agroforestry carbon financing (including REDD+ and CDM), through policy, legal and institutional reforms, such as enhanced cross-sectoral coordination and innovative mechanisms for local benefit sharing • Improve forest and woodland information collection and management and enhance use of ICT for information sharing and accountability	• Global funding mechanisms (incl. GEF) to support coastal mangrove and high conservation value forest, whether or not linked to ecotourism • Climate funds: FIP (Forest Investment Program) in Ghana and FCPF REDD readiness and Carbon Fund.
Central Africa	• Support for domestic timber industry through value chain enhancement and eco-tourism (growth sectors approach in Cameroon) including Gabon, DRC and Republic of Congo • Sustainable wood-based energy production and promotion of agro-forestry systems around major urban areas (DRC, Republic of Congo, northern Cameroon) • Continued support for improved concession management • Community-based forest and woodland management • Support for plantation establishment	• Continued support for nature conservation and preservation of biodiversity inside and outside the protected areas • Reduction of potential adverse impacts on forests from developments in agriculture, transport, energy, and mining sectors, and creation of sustainable financing mechanisms for nature conservation (including through biodiversity and carbon off-sets).	• Enhanced monitoring, transparency and sustainable management of production forests including legality assurance needed for FLEGT in countries having signed Voluntary Partnership Agreements (VPA) with the EU (Cameroon, Congo) or in the process of negotiating these (CAR, DRC, Gabon), • Decentralized forest management and revenue management; mechanisms to support livelihoods and rights of indigenous and forest dependent peoples: strengthened, accountable forest institutions • Sustainable Forest Management mainstreamed in broader mining, agriculture and infrastructure (transport, energy) governance reforms	• Mainstream SFM in other sectoral operations: investment support for value chain approach (Gabon, Cameroon and Central African Republic) for Employment Skills development (Congo), Support for forest protection and local livelihoods through infrastructure, energy and mining operations (Cameroon, Congo, DRC) • Global funding mechanisms (incl. GEF) to support biodiversity management and Protected areas • Climate funds: FIP (Forest Investment Program) in DRC and FCPF REDD Readiness and Carbon Fund

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	Pillars			
	Jobs and competitiveness	**Resilience and risk management**	**Governance and capacity building**	**Implementation mechanisms**
Central Africa			• Improved enabling environment for forest/agroforestry carbon financing (including REDD+ and CDM), through policy, legal and institutional reforms, such as enhanced cross-sectoral coordination and innovative mechanisms for local benefit sharing • Improve forest and woodland information collection and management and enhance use of ICT for information sharing and accountability	
Eastern Africa	• Support for small-holder plantations • Sustainable wood-based energy production and value chain enhancement • Agro-forestry and trees in the production landscape • Nature-based tourism initiatives	• Landscape restoration and agro-forestry • Watershed protection • Conservation of fragile ecosystems	• Improved enabling environment for small-holder and larger scale plantations • Strengthened regulatory and enabling environment for fuel-wood-charcoal value chain • Strengthened decentralized and participatory governance mechanisms, information sharing and accountability • Improved enabling environment for forest/agroforestry carbon financing (including REDD+ and CDM), through policy, legal and institutional reforms, such as enhanced cross-sectoral coordination and innovative mechanisms for local benefit sharing • Improve forest and woodland information collection and management and enhance use of ICT	• Self-standing Natural Resources Management operations: watershed management, biomass energy production and marketing, • Mainstream SFM in other sectoral operations: Value-chain and growth pole operations • Global funding mechanisms (incl. GEF and REDD-related funds)

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	Pillars			
	Jobs and competitiveness	**Resilience and risk management**	**Governance and capacity building**	**Implementation mechanisms**
Southern Africa	• Landscape restoration with agro-forestry in the production landscape using decentralized approaches (all countries) • Enhanced protected area management and eco-tourism development (Madagascar, Mozambique, Zambia, Botswana, Malawi • Value-chain enhancement in the local timber industry (especially Zambia, potentially Zimbabwe & other countries	• Watershed management (Malawi, Madagascar, Lesotho) and coastal mangrove protection (Mozambique) • Reforestation/erosion management with infrastructure and mining development (Mozambique, Malawi, Angola, Madagascar) • Coastal mangrove protection (Mozambique) • Forest biodiversity conservation (especially Madagascar but also other countries)	• Support for enhanced enabling environment for responsible private sector investment in small-holder and plantation forestry (Mozambique and potentially Zambia and Angola)[a], including land tenure reform • Information sharing and enhanced governance & accountability (especially Madagascar abut also other countries) • Improve forest and woodland information collection and management and enhance use of ICT	• Support through IDA operations, whether or not leveraged by CDM, REDD and GEF financing mechanisms. • Mainstream SFM in other sectoral operations: (mining, roads, energy)
Regional and International Cooperation	• Trade facilitation (important timber sector complementarities) • Forest protection for safeguarding major regional transport corridors (protecting roads and railways from erosion, reducing river sedimentation constraining shipping) • Enhanced environment for emergence of (sub-)regional platforms for carbon and other environmental services trading mechanisms, to reduce country risk	• Watershed management • Trans-border protected area network	• Cross-country learning through regional institutions: Learning from the COMIFAC countries which are collaborating on a range of REDD-related issues, including development of common methodologies, project piloting and allometric measurement approaches; • Improve cross-border governance and cooperation in forest governance through transport and trade facilitation projects (West Africa, Central Africa, and Central to East Africa corridors).	• Scaling up existing regional programs which address watershed and river basin management, (Lake Victoria Environment Program, proposed Lake Malawi program, proposed Nile Basin program) • Address improved trade and transport facilitation • Regional REDD programs in Central Africa • Support for international processes such as FLEGT and EITI where these are applicable to African countries (e.g. Ghana and the Congo Basin countries, and Liberia respectively) and specifically working on implementation of VPA clauses aiming to legalize domestic and sub-regional markets

[a] And possibly Zimbabwe when the country program scales up.