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Acronyms and Abbreviations

ACODE	Advocates Coalition for Development and Environment
AfDB	African Development Bank
AG DSIP	Agriculture Sector Development Strategy and Investment Plan
APRM	African Peer Review Mechanism
ATAAS	Agricultural Technology and Agribusiness Advisory Services
BCM	billion cubic meters
BEIA	Biomass Energy Initiative for Africa
bil	billion
BMU	Beach Management Unit
BOU	Bank of Uganda
CAADP	Comprehensive Africa Agriculture Development Programme
CAO	Chief Administrative Officer
CAS	Country Assistance Strategy
CBA	cost-benefit analysis
CBOs	community-based organizations
CBWMP	Community-Based Wetland Management Plan
CDM	Clean Development Mechanism
CEA	Country Environmental Analysis
CFM	Collaborative Forest Management
CFR	Central Forest Reserve
CLA	Communal Land Association
CO ₂	carbon dioxide
CPA	CDM Program Activity
CSO	civil society organization
DALY	Disability-Adjusted Life Years
DANIDA	Danish International Development Agency
DDP	District Development Plan
DEA	Directorate of Environment Affairs
DES	Department of Environment Services
DESS	Department of Environmental Support Services
DFID	Department for International Development UK
DFR	Department of Fisheries Resources
DFS	District Forestry Services
DNA	Designated National Authority
DOM	Department of Meteorology
DP	Development Partner
DRC	Democratic Republic of Congo
DRR	Disaster Risk Reduction
DSIP	Development Strategy and Investment Plan
DWD	Directorate of Water Development
DWRM	Directorate of Water Resources Management
DWSDCG	District Water and Sanitation Development Conditional Grant
EAC	East African Community
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EITI	Extractive Industries and Transparency Initiative
EMCBPII	Environmental Management Capacity Building Project II
ENR	Environment and Natural Resources
ENR SIP	Environment and Natural Resources Sector Investment Plan
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FIEFOC	Farm Income Enhancement and Forest Conservation Project
FMP	Forest Management Plan
FSSD	Forestry Sector Support Department
FVO	Food and Veterinary Office
GAC	Governance and Anti-Corruption
GDP	gross domestic product
GEF	Global Environment Facility

GIS	Geographic Information System
GIZ	German Society for International Cooperation formerly GTZ
GOU	Government of Uganda
IBRD	International Bank for Reconstruction and Development
IDP	Internally Displaced Person
IDRC	International Development Research Centre
IFC	International Finance Corporation
IFPRI	International Food Policy Research Institute
IGG	Inspector-General of Government
IIED	International Institute for Environment and Development
IMCF	Inter-Ministerial Cooperation Framework
IPM	Integrated Pest Management
IRDI	Integrated Rural Development Initiative
IUCN	International Union for the Conservation of Nature
IWRM	Integrated Water Resource Management
JICA	Japanese International Cooperation Agency
JLOS	Justice, Law and Order Sector
JSR	Joint Sector Review
LEC	Local Environment Committee
LFR	Local Forest Reserve
LG	Local Government
LGDP	Local Government Development Programme
LMOs	Lake Management Organizations
LVBC	Lake Victoria Basin Commission
M&E	monitoring and evaluation
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MDG	Millennium Development Goal
MEMD	Ministry of Energy and Mineral Development
MEY	Maximum Economic Yield
MFPED	Ministry of Finance, Planning and Economic Development
mil	million
MIS	management information systems
MLHUD	Ministry of Lands, Housing and Urban Development
MOPPED	Ministry of Planning, Finance and Economic Development
MOH	Ministry of Health
MOLG	Ministry of Local Government
MOU	memorandum of understanding
MSY	maximum sustainable yield
MTEF	Medium Term Expenditure Framework
MTTI	Ministry of Tourism, Trade and Industry
MW	megawatts
MWE	Ministry of Water and Environment
MWLE	Ministry of Water, Lands and Environment former
NAADS	National Agriculture Advisory Services
NAPA	National Adaptation Programme of Action
NARIs	National Agricultural Research Institutes
NARO	National Agriculture Research Organization
NARP	National Agricultural Research Program
NARS	National Agricultural Research Strategy
NBI	Nile Basin Initiative
NDP	National Development Plan
NEA	National Environment Act
NEMA	National Environmental Management Authority
NFA	National Forestry Authority
NFP	National Forestry Plan
NFTPA	National Forestry Tree Planting Act
NGO	nongovernmental organization
NOC	National Oil Company
NORAD	Norwegian Agency for Development Cooperation
NPV	net present value
NTFPs	non-timber forest products

NTSC	National Tree Seed Centre
NWIS	National Wetland Information System
NWP	National Wetlands Conservation and Management Programme
NWRA	National Water Resources Assessment
NWSC	National Water and Sewerage Corporation
PA	Protected Area
PAF	Poverty Action Fund
PAU	Petroleum Authority of Uganda
PCE	Policy Committee on the Environment
PEAP	Poverty Eradication Action Plan
PES	Payment for Ecosystem Service
PMA	Plan for the Modernization of Agriculture
PoA	Programme of Activities
PPDA	Public Procurement and Disposal Authority
PPPs	private-public partnerships
PSAs	production-sharing agreements
PSRP	Public Service Reform Programme
REDD+	Reducing Emissions from Deforestation and Forest Degradation Plus
RETs	reduced energy technologies
R-PP	Readiness Preparation Proposal
RTSU	Regional Technical Support Unit
SAICM	Strategic Approach to International Chemicals Management
SEA	Strategic Environmental Assessment
SFM	Sustainable Forest Management
SIP	Sector Investment Plan
SLM	Sustainable Land Management
SMC	Sound Management of Chemicals
SMEs	small and medium enterprises
SNA	System of National Accounts
SPGS	Sawlog Production Grant Scheme
SPMF	Sector Performance Monitoring Framework
SPR	Sector Performance Report
TA	technical assistance
TEV	Total Economic Value
THF	Tropical High Forest
TSU	Technical Support Unit
TWC	Technical Working Committee
UAIA	Uganda Association for Impact Assessment
UBL	Uganda Breweries Limited
UBOS	Uganda Bureau of Statistics
UCPC	Uganda Cleaner Production Centre
UJAS	Uganda Joint Assistance Strategy
ULC	Uganda Lands Commission
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNFFE	Uganda National Farmers Federation
UTGA	Uganda Timber Growers Association
UWA	Uganda Wildlife Authority
WCS	Wildlife Conservation Society
WESWG	Water and Environment Sector Working Group
WfP	Water for Production
WFP	World Food Program
WID	Wetlands Inspection Division
WMD	Wetlands Management Department
WMZ	Water Management Zones
WPC	Water Policy Committee
WRI	World Resources Institute
WRM	Water Resources Management

WSDFs	Water Sector Development Facilities
WSS	Water Supply and Sanitation
WSSIP	Water Supply and Sanitation Sector Strategic Investment Plan
WSSP	Wetlands Sector Strategic Plan
WTP	Willingness to Pay
ZARDIs	Zonal Agricultural Research and Development Institutes

Table of Contents

ACRONYMS AND ABBREVIATIONS

EXECUTIVE SUMMARY **V**

RECOMMENDATIONS FROM THE CEA	XIII
WORLD BANK INVOLVEMENT	XIII

INTRODUCTION **1**

SECTION I. PRIORITY SECTORS FOR ENVIRONMENTAL MANAGEMENT **5**

CHAPTER 1. THE ECONOMIC AND ENVIRONMENTAL CONTEXT **6**

1.1 OVERVIEW OF THE ECONOMY	6
1.2 SOCIOECONOMIC CHALLENGES	6
1.3 NATIONAL VISION AND DEVELOPMENT PLAN	7
1.4 ENVIRONMENTAL MANAGEMENT CHALLENGES	8
1.5 CLIMATE CHANGE, VARIABILITY, AND VULNERABILITY	18
1.6 LOCAL GOVERNANCE ISSUES	19

CHAPTER 2. THE ECONOMICS OF ENVIRONMENT AND NATURAL RESOURCES **21**

2.1 THE ASSET BASE: IMPORTANCE OF NATURAL CAPITAL FOR UGANDA'S WEALTH	21
2.2 INCOME FLOWS FROM NATURAL RESOURCES, AND COSTS OF ENVIRONMENT AND NATURAL RESOURCES (ENR) DEGRADATION	23
2.3 AGRICULTURAL SECTOR INCOME	23
2.4 FORESTRY RESOURCES INCOME AT RISK	24
2.5 WETLAND RESOURCES INCOME AT RISK	28
2.6 FISHERIES INCOME AT RISK	31
2.7 SUMMARY OF INDICATIVE CURRENT INCOME FROM NATURAL RESOURCES	32
2.8 COSTS OF LAND DEGRADATION	32
2.9 COST OF UNSUSTAINABLE FORESTRY TO CARBON STORAGE VALUE	37
2.10 COSTS OF POLLUTION	37
2.11 COSTS OF CLIMATE VULNERABILITY	40
2.12 SUMMARY OF INDICATIVE COSTS OF NATURAL RESOURCE DEGRADATION	41
2.13 SELECTING A FOCUS FOR THE COUNTRY ENVIRONMENTAL ANALYSIS	44

SECTION II. ENVIRONMENTAL INSTITUTIONS AND GOVERNANCE **47**

CHAPTER 3. INSTITUTIONAL FRAMEWORK FOR ENR MANAGEMENT **48**

3.1 OVERVIEW	48
3.2 OVERLAPPING MANDATES IN ENR MANAGEMENT	49
3.3 LOCAL GOVERNMENT ADMINISTRATION AND PLANNING	50
3.4 GOVERNING PRINCIPLE: DECENTRALIZED MANAGEMENT OF NATURAL RESOURCES	50
3.5 INSTITUTIONAL FRAMEWORKS FOR NATURAL RESOURCE SECTORS	51

CHAPTER 4. CHALLENGES TO DECENTRALIZED ENR MANAGEMENT **57**

4.1 DECENTRALIZED GOVERNANCE	57
4.2 REVENUE SOURCES FOR MWE SUBSECTORS	57
4.3 FUNDING FOR LOCAL GOVERNMENT	59
4.4 DISTRICT BUDGETS FOR ENR: CASE STUDY EVIDENCE	61

4.5	PERSONNEL AND EQUIPMENT DEFICIENCIES	63
4.6	LOCAL GOVERNMENT PLANNING AND BUDGET PROCESS	65
4.7	CHALLENGES FOR THE ENR SECTOR IN LG PLANNING AND BUDGETING	66
4.8	CHALLENGES FOR COMMUNITY PARTICIPATION IN LOCAL PLANNING AND BUDGETING	68
4.9	CHALLENGES FOR WATER SUBSECTOR MANAGEMENT	69
4.10	CHALLENGES LINKED TO LAND MANAGEMENT	69
4.11	ADAPTING TO CHANGING CLIMATE	70
	CHAPTER 5. CORRUPTION AND POLITICAL INTERFERENCE	71
5.1	ENLISTING THE POOR FOR POLITICAL GAIN	71
5.2	POLITICAL INFLUENCE FOR THE WELL CONNECTED	71
5.3	THEFT AND BRIBERY	72
5.4	HUMAN AND ENVIRONMENTAL COSTS OF POLITICAL INTERFERENCE	72
	CHAPTER 6. THE OIL AND GAS SECTOR	74
6.1	DEVELOPMENT OF THE INSTITUTIONAL STRUCTURE	74
6.2	ENVIRONMENTAL IMPACT ASSESSMENT	75
	CHAPTER 7. RESPONDING TO GOVERNANCE ISSUES	78
7.1	RAISING THE PROFILE OF THE ENVIRONMENT AND NATURAL RESOURCES (ENR)	78
7.2	IMPROVING ENR PERFORMANCE	78
7.3	ADDRESSING CORRUPTION	80
7.4	OIL AND GAS SECTOR	82
7.5	REDUCING VULNERABILITY TO CLIMATE CHANGE AND VARIABILITY	82
7.6	SUSTAINABLE LAND MANAGEMENT	85
7.7	SOLID WASTE AND CHEMICAL POLLUTION	87
7.8	INDOOR AIR POLLUTION	88
7.9	CLEAN DEVELOPMENT MECHANISM IN UGANDA	88
7.10	NATIONAL REDD STRATEGY FOR UGANDA	89
7.11	CSOs AT WORK IN ENR	89
	<u>SECTION III. SPECIAL FOCUS SECTORS: FORESTS, WETLANDS, AND FISHERIES</u>	<u>92</u>
	CHAPTER 8. FORESTRY	93
8.1	DEFORESTATION, DEGRADATION, AND DEPENDENCY	94
8.2	FOREST OWNERSHIP	95
8.3	FORESTRY AS A GROWTH SECTOR IN THE NATIONAL DEVELOPMENT PLAN	97
8.4	FORESTRY INSTITUTIONAL STRUCTURE	98
8.5	PERFORMANCE OF THE INSTITUTIONAL STRUCTURE	99
8.6	COMMUNITIES IN FOREST MANAGEMENT	105
8.7	FUNDING THE FORESTRY SECTOR	106
8.8	RECOMMENDATIONS TO IMPROVING PERFORMANCE OF THE FORESTRY SECTOR	107
	CHAPTER 9. WETLANDS	116
9.1	INSTITUTIONAL BACKGROUND SUMMARY	117
9.2	WETLAND OWNERSHIP ISSUES	118
9.3	WETLAND DATA	118
9.4	DEMARCATIION STRATEGY	119
9.5	WETLANDS DEPENDENCY	120
9.6	WETLAND DEGRADATION	121
9.7	POLITICAL INTERFERENCE	122
9.8	INSTITUTIONAL FRAMEWORK FOR WETLANDS MANAGEMENT	123
9.9	MANAGEMENT STRUCTURES FOR WETLANDS CONSERVATION	126
9.10	MONITORING COMPLIANCE AND ENFORCEMENT	128

9.11 WETLAND RESTORATION AND MANAGEMENT INITIATIVES	129
9.12 FUNDING FOR WETLANDS MANAGEMENT	130
9.13 RECOMMENDATIONS	132
CHAPTER 10. FISHERIES, WITH ATTENTION TO NON-LAKE VICTORIA FISHERIES	134
10.1 FISHERIES DEPENDENCY	134
10.2 FISHERIES PRODUCTION	135
10.3 FISHERIES CAPACITY TO GENERATE NATIONAL WEALTH	137
10.4 FISHERIES LEGISLATION AND POLICY	139
10.5 FISHERIES MANAGEMENT CHALLENGES	141
10.6 FISHERIES COMANAGEMENT	145
10.7 AQUACULTURE IN UGANDA	148
10.8 GOVERNMENT INITIATIVES TO ADDRESS FISHERIES CHALLENGES	150
10.9 RECOMMENDATIONS TO IMPROVE FISHERIES MANAGEMENT	152
SECTION IV. MOVING FORWARD	155
CHAPTER 11. INSTITUTIONAL FRAMEWORK FOR ENVIRONMENTAL MANAGEMENT	156
11.1 FORWARD MOVING INITIATIVES	156
11.2 CONSTRAINTS TO FORWARD MOMENTUM	158
11.3 GOVERNMENT ACTIONS TO IMPROVE ENR MANAGEMENT	160
CHAPTER 12. POSSIBLE ENVIRONMENT AND NATURAL RESOURCES (ENR) AGENDA FOR THE BANK	167
12.1 GOVERNMENT ANTI-CORRUPTION (GAC) INITIATIVES	167
12.2 INNOVATIVE FINANCING	168
12.3 SECTOR-SPECIFIC CAPACITY DEVELOPMENT AND FIELD ACTIVITIES	170
BIBLIOGRAPHY	178

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Executive Summary

It is unlikely that Uganda's environment and natural resource (ENR) sectors will meet the National Development Plan (NDP) growth targets for 2014–15.¹ The country's economy relies on growth in its primary ENR sectors to maintain per capita incomes and generate investment. But the country's ENR assets are being degraded, compromising their capacity to generate future income. Current national income, too, is less than it would be without the yearly costs of ENR degradation.

Nearly half of Uganda is affected by severe land degradation: unsustainable land use practices lead to soil erosion and nutrient depletion and, in some areas, fatal landslides. Since 1990 Uganda has lost 40 percent of its forest cover; timber requirements will now need to be met by imports. Fish catches have been declining since they peaked in 2004–05, when they were probably well beyond maximum sustainable yields for the resource. Wetland area has declined by at least 30 percent since 1994, increasing the severity of recent flooding events. Finally, water resources are degraded from all of the above—unsustainable land use, deforestation, wetland degradation and conversion—plus pollution of surface and groundwater. At the same time, Uganda is an increasingly water-stressed country because of water demand growth and the vagaries of climate variability and change.

Uganda's national vision is to be a “transformed society,” and to move “from a peasant to a prosperous country within 30 years.”² The vision includes eight objectives. The first six pertain to income, employment, infrastructure, social services, innovation, and human development. The last two involve strengthening good governance and promoting sustainable use of ENR. The analysis in this Country Environmental Analysis (CEA) shows that achieving the objective of sustainable ENR use relies heavily on achieving the good governance objective.

The NDP describes good governance as “the positive exercise of authority. It is characterized by citizen transformation and participation in governance, control of corruption, political stability, respect for the rule of law, Government effectiveness, regulatory quality and effective knowledge management.” The NDP goes on to note that good governance “is a prerequisite for achieving growth and poverty eradication. Therefore, to successfully implement the NDP, good governance is of paramount importance.”

Sound ENR management is lacking in Uganda because of poor ENR governance. Transparency and accountability in ENR management is severely absent. Public participation in decentralized resource use decisions is superficial. The Decentralization Policy adopted in 1993 envisioned good governance, democratic participation, and control of local decision making by local communities. But as the African Peer Review Mechanism (APRM 2009) noted in its review of governance in Uganda: “democratic gains from the decentralization process are in serious danger of being eroded.”

¹ The 2010–11 to 2014–15 NDP is the first of six NDPs that comprise the National Vision Framework.

² Government of Uganda National Development Plan (NDP) 2010.

Corruption and political interference in ENR management are recurring themes in this CEA; both plague the entire ENR management hierarchy. This finding is consistent with the NDP (2010) conclusion that “the progress made both in public administration and public sector management is being hampered by corruption at various levels of Government.” The NDP also notes that the “government recognizes the devastating socio-economic effects of corruption and is committed to taking corrective and deterrent measures in order to fully realize the potential for improving social and economic conditions.” Corruption and political interference fall within the larger problem of weak public sector management, which is identified in the NDP as a binding constraint to achieving Uganda’s vision. Achieving sustainable ENR use requires addressing weak public sector management, including those elements that foster corrupt practices.

Severely inadequate funding to the ENR sector is another recurrent theme in this report; it handicaps both central and decentralized ENR institutions, and thereby reduces government effectiveness. It also increases the vulnerability of both government personnel and citizens to corrupt practices. Inadequate financing and the inadequate quantity and quality of human resources are also identified in the NDP as binding constraints to realizing Uganda’s vision.

In the most recent fiscal year, actual payments to the Ministry of Water and Environment (MWE) for the ENR sector amounted to \$16 million, or 0.5 percent of total government spending. The economic value of ENR goods and services is at least \$4.44 billion per year (bil/yr), when including only a few ENR goods and services. The government is therefore spending less than 0.36 percent of the ENR income to manage the sector. Districts, where the responsibility for ENR management lies, spend under 5 percent of their budgets on natural resources, and this primarily covers salaries. Mandated district ENR positions are often not filled for lack of funding: a recent survey found that only half of districts had a natural resource officer. District ENR officers typically have no equipment or vehicles to do their jobs.

Uganda’s population is about 32 million (2010). Growing at 3.2 percent per year, averaged over the past decade (UBOS 2010), it currently has the third-highest population growth rate in the world and is predicted to take first place in the coming decades. About 31 percent of the population lives below the national poverty line of \$30 per month, and food security is an issue for 62 percent of the population. Most Ugandans (85 percent) depend on the agriculture sector, which includes cash and food crops, livestock, forestry, and fishing. The sector’s real growth has been falling since 2000–01, although it recovered to grow by 2 percent in 2009–10. Low growth in agriculture relative to the population growth will increase the number of those living in poverty and remove the possibility of achieving the Millennium Development Goal (MDG) for poverty reduction.

The poor are closest to the ENR sector, and the first to suffer the consequences of degradation. Over 95 percent of Uganda’s farmers are cultivating, on average, 2 hectares of rainfed agriculture. Declining yields from farmland degradation, coupled with population growth, has the poorest farmers increasingly farming marginal land. The resultant environmental degradation has reduced the resilience of ecosystems to absorb climate variability and change. Landslides and flooding have become regular events with

devastating impacts exacerbated by land or wetland degradation, deforestation, or some combination of the two.

The lack of a comprehensive, watershed management approach to water management and planning has amplified the impacts of even the usual climate variable. As the National Adaptation Programme of Action (NAPA) reported: “Drought is the single most important and widespread disaster in Uganda.” However, there has been little planning to develop ways to adapt to variable rainfall deficits in agriculture and drinking water supply; and outside of the MWE and district environment offices, there is little apparent appreciation of the connection between secure water supplies and the integrity of other natural resource ecosystems.

The well-being of Ugandans, and particularly the poor, is tied to well-functioning ecosystems; but because most of the goods and services provided by the country’s ecosystems do not pass through formal markets, they are invisible to policy makers. One-quarter of Ugandans depend on wetlands for their domestic water supply. These water-provisioning wetlands services alone are worth over \$100 million per year (mil/yr). Forests maintain water quality by minimizing soil erosion and by filtering pollutants, and according to the Food and Agriculture Organization (FAO): “water may well be forests’ most useful and important product.” However, quantifying the water-provisioning service value of Uganda’s forests is difficult because the impacts of forest management occur over a catchment area, and the affected population may not be close to the forests. Estimating the value of forest water services to only the 2.7 million people known to be adjacent to forests results in an estimated water value of \$7.8 mil/yr.

But water quality and supply services of healthy ecosystems are only part of the picture. Uganda’s wetlands provide a myriad of food and fiber products. Forage for about 10 percent of the nation’s cattle is worth about \$90 mil/yr; papyrus plant material could be worth \$38 mil/yr. Similarly, the country’s forests provide a large number of nontimber forest products—excluding fuel wood—potentially worth as much as \$63 mil/yr. The tourism value of forests—that is, the value added to the national economy because of the national park system—is about \$80 mil/yr.

Uganda’s gross domestic product (GDP) in 2009–10 was \$17 billion (USh 34,580 billion).³ Of that, the recorded contribution from the ENR sectors (farmland, forests, fisheries, and livestock) is \$4.06 billion. *If only a few* of the unrecorded goods and services provided by the ENR sectors are included, another \$382 mil/yr should be added to the total.

Environmental degradation is a drain on the national economy. The cost of degraded farmland is potentially very high. Annual foregone yields due to the reduced water productivity of eroded soils may be as high as \$2,500 mil/yr. The cost of siltation to water infrastructure due to soil erosion is another \$22 mil/yr.

The potential carbon storage value of Uganda’s current forest estate is estimated at \$1.2 billion. Uganda could capture some portion of this amount from the global community, through the application of Reducing Emissions from Deforestation and Forest Degradation

³ The exchange rate used throughout the study is US\$1=US\$ 2,025.

(Plus) REDD+ or similar protocols that prevent unsustainable use of the forest estate.⁴ But at recent rates of deforestation, Uganda's forest biomass is rapidly declining, and with it the carbon storage value of its forests. Since 2005 the loss in carbon storage value has been on average \$33.7 mil/yr.

Pollution costs to the economy are high. Indoor air pollution carries a particularly heavy burden because some 90 percent of Ugandans use biomass fuels, burned in simple and inefficient devices, in inadequately ventilated spaces. The cost of the resultant diseases, in terms of lost economic productivity, is estimated to be \$429 mil/yr. The health and lost productivity cost of water-borne diseases ranges between \$46 mil/yr and \$64 mil/yr. Meanwhile, the cost of fighting water pollution continues to climb.

The cost of climate vulnerability due to degraded ecosystems is also significant. A few examples suffice: Damage after the massive flooding in 2007 that affected 6 million people was estimated at \$75 million (2010 prices) by the affected districts. In 2010 the landslides on the deforested slopes of Mt. Elgon posed a short-term emergency cost of \$1.2 million.

The yearly income from Uganda's stock of renewable natural resources is conceivably available in perpetuity, if the integrity of the stock remains intact. But environmental degradation and ecosystem conversion are taking a heavy toll on Uganda's natural assets, compromising their future income-generating capacity. Accelerated growth rates in forestry output during the past decade point to a liquidation of the country's forestry assets. Fish stocks appear endangered, given their falling yields, but available fisheries data do not provide much information about the condition of fish stocks. Similarly, the value of wetlands is unknown because of a lack of data on the extent and uses of wetlands.

The World Bank estimated Uganda's per capita wealth in natural assets at \$3,400 in 2005, with farmland accounting for most (\$2,485) of that amount (World Bank 2011a). The estimate presents a lower bound because it excludes fisheries and water resources, as well as the country's newfound oil wealth (which has increased Uganda's natural capital wealth considerably). The asset value of oil raises per capita wealth by a rough estimate of \$1,240. But farmland remains the country's most important natural asset.

There is a sentiment among political leaders that the country's oil wealth is the answer to its socioeconomic problems because it presents an opportunity to finance rapid development and poverty reduction.⁵ Although there are notable exceptions (Botswana, Chile), the economic performance of (nonrenewable/extractive) resource-rich developing countries has often been poor and characterized by the "resource curse." In such cases, resource wealth does not lead to long-term and equitable prosperity. Instead, it often actually undermines development outcomes.

For nonrenewable resource wealth to have a lasting effect it needs to be transformed into other forms of income-generating assets. This is possible where good governance allows for the efficient capture of resource rents, which are in turn invested in other sectors of the

⁴ Uganda has undertaken to formulate a National REDD+ Strategy.

⁵ Based on World Bank (2010a) estimates and an oil price of \$100 per barrel, government revenue at peak oil production could be around \$3.8 bil/yr. By comparison, current GDP is \$17 billion.

economy. Development and management of the extractive sector needs to be efficient, and macroeconomic management of the economy needs to target balanced economic growth between sectors and regions. The resource curse happens when good governance is lacking and macroeconomic management is inappropriate.

Currently in Uganda, there is great concern that poor governance will lead to the resource curse. There are fears that oil rents will not be invested wisely, and that the development of the oil sector will not be efficient and equitable. The institutional structure for oil development is still under formation, with the draft Petroleum Bill under considerable scrutiny and criticism. There is also evidence that the tools for deciding how to best utilize natural resources in the oil development process—the Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA)—are inadequately employed, lacking in public participation, and subject to corruption and political interference.

According to the APRM, Uganda ranks the best in Africa in terms of formulating the legal framework to fight corruption (APRM 2009). But the anti-corruption agencies to do the job are underfunded, and anti-corruption strategies are yet to be implemented. Some high-profile cases of embezzlement have been broadcast by the media, but perhaps the most environmentally damaging form of corruption is the most difficult to prosecute: that perpetrated by politically motivated individuals to garner electoral success.

Forestry, wetlands, wildlife, and water have all been victims of political interference. In several cases, locally elected leaders and various commissioners, ministers, and members of parliament have subverted efforts by environmental officials to enforce environmental laws, bylaws, and defined procedures. Politically motivated individuals have undermined work (restoration activities, community planning processes, compliance enforcement) by openly supporting encroachment into wetlands and forest reserves.

Governance can be fought through transparency and accountability. But in Uganda decisions are not made transparent, and decision makers are rarely held accountable. There is an Access to Information Act (2005), but its provisions have not been fully implemented. The media have been censored for discussing accountability. Environmental managers have been dismissed for refusal to yield to political interference. There are no criteria to avoid conflict of interest in government procurement decisions, and information on such decisions is difficult to obtain.

The lack of transparency and accountability, coupled with legislative gaps in ENR management, fuel conflict. Conflict between government departments occurs when, for example, districts are not consulted on land-use decisions made for their jurisdictions; or when their participation in EIA processes is inconsequential. Conflict between citizens and ENR officials stems from unclear use rights and mixed messages from politicians regarding the validity of regulations and government policy. Conflict occurs increasingly between resource users, particularly between farmers and pastoralists, over dwindling water resources. Conflict between individuals and communities is feared in the western region where land speculation for oil development is changing community land tenure relationships, and land transactions are processed with irregularities.

Public participation was to be a keystone of decentralizing control over natural resources. But there is in fact little de facto public participation in natural resource decisions. Planning

processes at the local level are *seen* to be participatory, but the agenda is set at the top. In the worst cases, villages do not participate at all in planning due to lack of funds to convene meetings or the lack of a community development officer. Under EIA regulations, implicated communities are supposed to be consulted, but barriers such as access to information and inadequate finances effectively stymie community input. In reality, district officials are even constrained to participate in ENR management decisions because most of their funding from the center consists of conditional grants for centrally determined priorities.

The institutional framework for ENR management in Uganda is generally considered sound. However, there are some important gaps that cause problems. The lack of a land-use policy is repeatedly cited as a constraint in the management of forests, wetlands, rangelands, water, and energy. Forest regulations and guidelines under the National Forest and Tree Planting Act (2003) have yet to be operationalized. A Wetlands Bill (2009) is still awaiting approval, as is the wetlands strategic plan. The Fisheries Act (1964) is sorely outdated, but replacement legislation, the Fisheries Bill (2004), is also awaiting treatment. Legislative approval typically takes years. Recently passed amendments to fisheries regulations were reportedly stalled in the legislature for four years due to fears that the tougher rules would cost votes.

Weak management and administration of land ownership in Uganda compounds the difficulty of ENR management. Multiple land tenure systems are in use, and only 10 percent of land is actually titled. Customary land tenure is recognized but mostly undocumented. There is little capacity at national and local government levels to deliver land services to the public. The level of awareness on land issues, rights, and obligations is low; and the excessive bureaucracy around accessing land titles or acquiring land fosters corruption.

The difficulty of wetlands and forest management is exacerbated by the absence of legally defined boundaries. In the case of wetlands, the boundary issue is complicated because boundaries are mobile: about half of Uganda's wetlands are seasonal. The MWE is formulating a strategy for boundary demarcation and classification. Once it is in place, gazettelement for protection becomes possible. The strategy will require mechanisms for identification and classification of wetlands, and for negotiation and compensation of genuine landowners. The process will be fraught with opportunities for corruption, and the greatest challenge will be in ensuring that the demarcation and gazetting processes for conservation are not hijacked by the political agenda.

The MWE is undertaking various institutional initiatives to improve ENR management. The demarcation strategy development is one such initiative; an institutional review of its ENR subsector is another. The water supply and sanitation (WSS) subsector of the MWE has been considered the most coordinated and best documented in Africa, but its ENR subsector is weak. The MWE Joint-Sector Review (2010) described why it is weak, and the implications of that weakness:

Persistent low funding and staffing levels are affecting government capacity and ability to manage and protect the nation's vital natural resources base. This, in turn, impacts on cost-effectiveness and sustainability of water services delivery and natural resources management. Costs for water supplies are

increasing due to increasing environmental degradation, declining water quality and quantity . . . Close synergies need to be established between ENR interventions, water resources management and water supply planning and development.

The institutional review is to remedy the performance imbalance between the ENR and WSS subsectors, while also bringing them closer together to synergize their efforts and meet their respective objectives around a common interest: water. It is also to clarify mandates across ENR management bodies. Apparent overlaps, particularly between the National Environment Management Authority (NEMA) and MWE, confuse lines of reporting and communication between central and decentralized government bodies, and between government and the public. The institutional review and demarcation strategy initiatives are supported by the Danish International Development Agency (DANIDA).

Another common interest is climate change. A Climate Change Unit has been established in the MWE, but it lacks the requisite technical and research capacity. The MWE has also undertaken the development of a draft policy for climate change by 2012, and a communication strategy to raise awareness. Here again, the links between ENR and water supply are acknowledged. A WSS Strategic Investment Plan has been finalized. Cooperation mechanisms are being developed between the MWE and Ministry of Agriculture, Animal Industry and Fisheries (MAAIF); and water management zones have been created to bring water planning and investment to regions and districts for an integrated water resource management (IWRM) approach.

Another new avenue for cross-sector cooperation concerns sustainable land management (SLM). MAAIF has drafted an SLM Strategic Investment Framework, an important part of which is an Inter-Ministerial Cooperation Framework (IMCF). The IMCF brings together many departments from different ministries, and the public, to address land degradation. The SLM initiative is supported by a number of TerrAfrica partners, including the Global Environment Facility (GEF).

The mismanagement of Uganda's forestry sector came to light in recent years. Accelerated deforestation, coupled with allegations of corruption and political interference in management, prompted condemnation from the general public and caution in the donor community, some of whom withdrew support from the sector. To address the debacle, the MWE initiated a performance review of the sector, supported by the Norwegian Agency for Development Cooperation (NORAD).

The forestry review found that the legislative and policy framework of the sector is essentially sound. But inadequate and unbalanced funding of its three key management bodies handicapped the management structure from the start, which reduced its effectiveness and increased the sector's vulnerability to corruption and political pressure.

The recommendations for forestry reform, following from the performance review and other work on forestry governance, essentially calls for the three institutions—the National Forestry Authority (NFA), Forest Sector Support Department (FSSD), and District Forestry Services (DFS)—to return to their mandates as originally intended. Additionally, the sector needs to improve transparency and accountability and public participation in collaborative management, and to secure its financing and address inefficiencies. Many of the

recommendations fed into the country's REDD+ Readiness Preparation Proposal (R-PP), which was submitted in mid-2011 with support from NORAD and the World Bank.

Uganda became a leader in wetland conservation when it joined the Ramsar convention in 1988, and its 12 Ramsar sites are testimonial to this. But wetlands outside the Ramsar sites are under severe pressure from population growth, and the tendency of people—both poor and rich—to benefit from what is perceived as free land. Vital wetland ecosystem services—water purification and waste treatment, water storage, and water regulation—are often overlooked, and wetlands are degraded or converted. There are serious knowledge gaps in wetlands. The location and extent of specific wetlands is based on a 1996 land cover map. There are some data on wetland products, but very little on wetland services.

Wetlands are protected in the Constitution for the collective good of the Ugandan people, and regulations for their protection exist under the National Environment Act (NEA). But inadequate funding to enforce the regulations, coupled with corruption and political interference, puts wetlands under heavy pressure from both poor and affluent encroachers. The examples of corruption are numerous—to the point that they compete with lack of funding as the second-biggest challenge to wetland protection after population pressure.

The Wetlands Management Department (WMD) is small. It collaborates with NEMA to enforce wetland regulations. The WMD is currently nudging forward a Wetlands Bill and approval of a Wetlands Strategic Plan. Another major focus is the demarcation strategy and data development. There are a few projects in the sector, including a GEF Protected Area Management initiative that involves, among other things, inventorying wetlands and their socioeconomic values. The World Resources Institute (WRI) undertook a project to demonstrate the use of spatial analysis to better target anti-poverty and wetland protection efforts.

Regarding Ugandan fisheries, there is concern about the future of capture fisheries and the slow expansion of aquaculture. New fisheries legislation has been stalled. According to FAO, the Fisheries Bill (2004) is in need of further development because of a lack of alignment with the Fisheries Policy framework. There is seemingly good potential for aquaculture, but expansion appears to be stalled for a variety of factors, ranging from unclear policies and strategies to inadequate access to inputs and know-how.

MAAIF, responsible for the fisheries subsector, is trying to reduce pressure on capture fisheries by increasing the capacity of fisheries staff to enforce the regulations. Fishing regulations were recently changed to increase penalties to stem the trade in immature fish, although reports indicate that the new penalty levels are too low to be effective. While trying to reduce pressure on catch, MAAIF is also planning investment in value-added infrastructure. This is in response to threats from the European Union (EU) of import bans on Ugandan fish.

In the course of this CEA, concerns were raised regarding Uganda's fisheries policy objective, which is to maximize production. Data on fisheries outside Lake Victoria are severely lacking, and the condition of the stocks and fishing effort is unknown. All economic rent from the sector is likely dissipated, and with subsidized inputs, the sector may in fact be a net drain on the economy. In any case, the sector remains important for food security,

and data improvement and policy analysis needs to be undertaken to better inform fisheries policy objectives.

Ugandan fisheries are under a co-management structure that was established in 2003–04, and which is considered best practice for communal lake fisheries management. But the elements of the structure have been underfunded. Districts have limited capacity to realize their mandate of support to the frontline managers: the Beach Management Units (BMUs). Perhaps even more important, the midlevel management structures, the lakewide organizations that provide lakewide coordination, cohesion, and capacity building to the BMUs, are not adequately supported. The BMUs face myriad problems trying to manage the fisheries, linked to inadequate capacity, both financial and technical, and corruption.

Fisheries are affected by activity in other ENR sectors that causes habitat degradation. Agricultural, urban, and industrial pollution increases water supply costs, but it also affects the fisheries. Fisheries breeding and nursery sites are not identified, mapped, or gazetted, and it is feared that land-use management practices are destroying some fish-breeding grounds.

Recommendations from the CEA

A list of actions to address ENR management issues in Uganda is found in table 11.1 in section IV. It is based on the research undertaken for this CEA by a World Bank team of staff and consultants from within and outside the country. It draws on current policy and planning documents, recent analyses of ENR institutions, and consultation with various government ministries, agencies, and departments of MWE, NEMA, and MAAIF; the Ministry of Finance, Planning and Economic Development; district government ENR offices; and members of the donor and nongovernmental organization (NGO) communities.

Box 1 draws on table 11.1 and lists recommended short- to medium-term objectives to improve governance in Uganda’s ENR sectors. Achieving these objectives will improve governance by enabling transparency and accountability in natural-resource-use decisions, and by strengthening existing institutional structures through legislation, policy, and increased capacity.

World Bank Involvement

At the Development Partners (DP) meeting in late 2010, the World Bank expressed its intention to increase its involvement in Uganda’s ENR sector. However, recent Bank work on governance in Uganda indicates that ENR support should be through targeted projects, and be conditional on adequate resource and managerial commitments from the Government of Uganda for the implicated central and local government institutions.

A strategic objective of the Bank’s Country Assistance Strategy CAS (2011–15) for Uganda is to *strengthen good governance and value for money*, corresponding to the objective of the National Vision to “strengthen good governance, defense and security.” Consequently there exists a Governance Partnership Facility to help intensify attention to governance and anti-corruption during the CAS period. To support the governance strategy of the CAS, any ENR sector project developed by the Bank would need to incorporate governance and anti-

corruption (GAC) diagnostics and arrangements, as was done for the Agricultural Technology and Agribusiness Advisory Services (ATAAS) project with MAAIF.

Bank projects in the ENR sector are listed in table 12.2, section IV. *Forestry* is a high priority for the Government of Uganda and, as such, the Bank has been providing institutional support to NEMA and NFA. It has also been working with NORAD on the REDD+ initiative. Through the GEF, there is a focus on carbon offset, biomass technology, and bioelectricity. Among other donors, NORAD and DANIDA remain supportive of Uganda's forestry sector. The African Development Bank (AfDB) and FAO, among others, are also present in forestry and intend to remain so. Other DP activities in the ENR sector are listed in table 12.3, section IV.

Wetlands have been less endowed with DP support, although has recently changed with the announcement of support from the Japanese International Cooperation Agency (JICA). A GEF medium-sized project provides institutional capacity at the national level as well as some local community wetland planning. Its main objective is the investigation of Payment for Ecosystem Service (PES) arrangements. There are a few multi-focused projects that will impact wetlands within their scope. For example, the recently approved GEF biodiversity project in northeastern Uganda focuses on forests but also mentions the rehabilitation of degraded wetlands.

Forestry has historically been a favored target of DP assistance but with the controversy over political interference and corruption in that sector in recent years, donors have become cautious about their participation in forestry. Conversely, as the importance of wetlands for water supply and climate resilience come to the fore, donors have begun to show more interest in that sector. However, forestry remains a high government priority and, as such, the government has recently (March 2012) taken measures to demonstrate its commitment to halt deforestation. A Bank intervention could cautiously continue to support forestry, while focusing on wetlands. An integrated ecosystem management approach would focus on the linkages between wetlands, fisheries, land management, and forestry at the central, district, and community level.

In the *fisheries* sector two projects under way focus on Lake Victoria: Uganda is part of the regional EU-supported Fisheries Management Plan, and within the GEF, in the ATAAS project of MAAIF, there is a component to support research capacity for fisheries with the objective of addressing postharvest management and value addition. On lakes George and Kyoga, Iceland is helping to build local and central capacity through its Quality Assurance for Fish Marketing Project.

A fisheries component within a broader integrated ecosystem management project could provide support to non-Lake Victoria fisheries. It would highlight linked wetland and lake and river systems that are jointly affected by fish breeding ground destruction, water pollution, and catchment degradation. This component could include identification of water body and wetland interface areas particularly at risk to the effects of degradation in contiguous ecosystems. A non-Lake Victoria fisheries activity would be important for local livelihoods in an integrated ecosystem approach to natural resource management.

Air and water pollution are other ENR areas that are imposing high degradation costs not consistently addressed by the Bank and DPs. Through the Environmental Management

Capacity Building Project II (EMCBPII), the Bank is providing technical assistance (TA) to NEMA in the development of air quality standards and regulations. This should continue, but given the health burden of indoor air pollution and the pressure on forest resources for energy use, the Bank should consider providing strategic support to improve biomass energy efficiencies, which would also help to reduce Uganda’s dependence on wood fuel—the latter also being a strategy of the NDP 2010.

Box 1. Short- to Medium-Term Actions to Improve ENR Governance	
Issue	Objective to achieve
Political commitment	<ul style="list-style-type: none"> • Unambiguous declaration of political leadership committed to sustainable environment and natural resources (ENR) management and respect for ENR laws. • New National Forestry Authority Board established, using the transparent procedures originally conceived for that purpose and employed successfully when the first Board was established.
Policy and legislation	<ul style="list-style-type: none"> • Clear and consistent mandates and accountability structures within the Ministry of Water and Environment (MWE) and National Environmental Management Authority (NEMA). • Land Use Policy finalized and under implementation. • Development of a Rangeland Policy and Strategic Plan. • Petroleum legislation consistent with the Petroleum Policy. • Wetlands legislation in place. • Forestry regulations operationalized. • Demarcation and Classification Strategy for Forests and Wetlands under way. • Climate Change Policy finalized. • Fisheries policy objectives assessed and corresponding legislation in draft.
Transparency and accountability	<ul style="list-style-type: none"> • Provisions of the Access to Information Act implemented. • Adequate funding to anti-corruption agencies. • Conflict of interest criteria established for government procurement evaluators. • Governance and Anti-Corruption (GAC) Plan, to accompany the Demarcation and Classification Strategy process. • GAC Plan for ENR that draws on lessons from the Water Supply and Sanitation (WSS) Good Governance Plan. • Outreach program to increase public awareness strategy on ENR policies, laws, and opportunities for public participation in ENR management decisions. • Improved information and dissemination systems.
Conflict resolution	<ul style="list-style-type: none"> • Clear procedures for citizens and ENR officials to resolve ENR use decisions. • Mechanisms to ensure district involvement in land-use decisions in their jurisdictions.

Box 1. Short- to Medium-Term Actions to Improve ENR Governance (cont'd)

Issue	Objective to achieve
Management capacity	<ul style="list-style-type: none"> • Restructured sector performance monitoring framework for ENR in place. • Pilot projects that demonstrate ENR/WSS synergies. • Environmental Impact Assessment (EIA) capacity and processes improved; EIA informs project <i>design</i>. • Capacity of Climate Change Unit increased. • Capacity needs assessment for forestry institutions finished and REDD+ strategy development under way. • Improved line ministry links to district ENR departments. • Capacity dedicated to regional technical support units. • Guidelines for District Forestry Services' engagement with private forestland owners developed and disseminated. • Wetlands Sector Strategic Plan under way. • Improved systems of ENR data capture, reporting, and dissemination. • Strengthened capacity to Department of Meteorology for improved local weather forecasting services.
Community participation in ENR management	<ul style="list-style-type: none"> • Revised mechanism to achieve Collaborative Forest Management (CFM) agreements. • Sustained support to Community-based Wetland Management Planning processes. • Strengthened fisheries co-management structures, particularly lakewide organizations. • Scale up community participation approaches that have proven to be successful.
Financial capacity	<ul style="list-style-type: none"> • Protected conditional ENR grants to districts in place. • National Environment Funds established. • Financing plan for National Forest Authority (NFA) in place. • District effectiveness in reinvestment of forestry revenue assessed. • REDD+ awareness and communication strategy under way. • Private sector engaged in corporate responsibility programs.
Economic efficiency	<ul style="list-style-type: none"> • ENR (including fisheries) revenue instruments evaluated for their efficiency in achieving policy and management objectives. • Candidates for Payment for Ecosystem Services (PES) arrangements identified. • Guidelines for forest certification schemes available to private operators.
Intersectoral coordination	<ul style="list-style-type: none"> • Well-functioning collaborative mechanisms for Sustainable Land Management (SLM) and water supply issues. • Collaborative management between MWE and the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) on land use/wetlands/fisheries interface areas. • Collaboration between the Forestry Sector Support Department (FSSD) and Ministry of Energy and Mineral Development (MEMD) on policy to reduce wood fuel use.

Introduction

A Country Environmental Analysis (CEA) is a World Bank analytical tool used to integrate environmental issues into development assistance strategies, programs, and projects. To that end, the CEA synthesizes environmental issues, highlights the environmental and economic implications of development policies, and evaluates the country's environmental management capacity. It is composed of three analytical building blocks: the identification of environment-development priority issues, a general analysis of environmental institutions and governance, and detailed analyses of the priority issues or sectors identified in the first analytical building block. It then examines the findings of this diagnostic process in light of the engagement of the Bank and other development partners (DPs) in the country's environment and natural resources (ENR) sectors. At this stage, potential Bank ENR interventions can be identified. This CEA for Uganda adheres to the CEA analytical framework so described.

Section I begins by setting the general economic and environment context in Uganda. It then looks more closely at the economic value of Uganda's natural resources, in terms of both stock (asset) values, and flow (income) values. The context provides a snapshot of Uganda's state of economic development against a backdrop of its environmental challenges. It provides information on the country's economic growth prospects, and the dependency of the population on natural resource sectors. It also highlights current trends and prevailing issues in the sectors.

Not surprisingly most of Uganda's wealth is in its stock of natural resources, and agricultural land remains its most valuable natural asset, in spite of the country's newly found oil wealth. The main challenge for Uganda is ensuring that its natural capital assets—both the renewable and nonrenewable—are effectively employed to build other forms of wealth: human capital, clean cities, and secondary and tertiary industries. Success in building national total wealth from natural resources—given the evidence from elsewhere in Africa and around the world—relies on both good governance and effective environmental management institutions. In the absence of these, at best natural wealth is inefficiently transformed into other forms of capital; at worst, it is liquidated for current consumption.

The analysis of income flows from natural resources provides an indication of the relative magnitudes of income at risk to environmental degradation. Some of these values are readily available in Uganda's national income accounts; others, however, are not. Many non-timber forest products (NTFPs) do not pass through formal markets, and are consequently unrecorded. Ecotourism value—in terms of economic rent to the forest asset—is not found in the national accounts. Nor is the value of water harvested from wetlands, or the value of forest and wetland ecosystem services. The economic analysis in section I provides estimates of these hidden values attributable to natural resources.

Various costs of degradation are also estimated. These may be foregone benefits, such as those associated with degraded soil or impaired health, that result in lost economic productivity. Or, they are the costs in terms of annual expenditure to deal with the effects

of pollution, to clean lake water for human use, or to remove water hyacinth to allow marine transportation. Indicative costs of climate-related events are also provided.

At the end of section I, focus sectors are chosen for detailed analysis in section III. These are forestry, wetlands, and fisheries—with emphasis on *non*-Lake Victoria fisheries.

The focus choice was based on a variety of input: the economic analysis conducted for the CEA; World Bank and DP ENR experience and engagement in Uganda; and consultation with various government ministries and agencies including the Ministry of Finance, Planning and Economic Development (MFPED), the Ministry of Water and Environment (MWE), the National Environmental Management Authority (NEMA), the National Forestry Authority (NFA), the Wetlands Management Department (WMD), and the Ministry of Agriculture, Animal Husbandry and Fisheries (MAAIF), among other stakeholders in the ENR sectors.

The focus choice was also founded in a federating theme: water supply. Acknowledged in Uganda's National Development Plan (NDP 2010), ensuring sufficient water supply is a development challenge for Uganda, in terms of its availability for human consumption, agricultural production, and industrial processes. The World Bank similarly recognizes the water challenge facing Uganda and has recently responded with the development of a Country Water Assistance Strategy (in draft, May 2011).

Water is negatively affected by environmental degradation in all other ecosystems. Forests and wetlands in particular are known to impact both water supply and water quality. Therefore meeting the water supply development challenge means addressing degradation in these ecosystems. Not surprisingly, in early discussions with government representatives, forests and wetlands emerged as the main candidates for a CEA focus.

The additional focus on non-Lake Victoria fisheries was added on the recommendation of Bank staff. Fisheries throughout Uganda are under threat of overfishing, but it has been observed that the smaller lakes are particularly threatened by catchment degradation. There is little information or data on the conditions in these lakes. But given the dependency of Ugandans on fish as a source of income and protein, and the links between wetland health, fish breeding sites, and lakes, it was considered precautionary to try and shed some light on the state of these important resources and their management.

Section II is dedicated to an analysis of environmental management institutions and environmental governance. Environmental management in Uganda is decentralized, consequently much of the analysis focuses on the functionality of local institutions. In addition to the various reporting and strategy documents of government ministries, the analysis benefits from several case studies on district environmental management institutions. The picture that emerges is consistent across districts: underfunding, and a vicious cycle of limited ENR management capacity to demonstrate the value of natural resource protection to decision makers, who are responsible for soliciting and allocating funds to support ENR management capacity. The capacity is not available to demonstrate value, so funds are not allocated, and the cycle continues.

The thorny issue of political interference and corruption cannot be avoided in the context of environmental governance in Uganda. It is discussed thematically because it occurs

under different guises, driven by either political or financial gain. It is pervasive in Uganda, particularly in the natural resource sectors. Consequently Uganda's governance capacity to avoid the "resource curse," often associated with oil and gas resources in developing countries, is debatable. The institutional structure for oil development is still under formation, with the draft Petroleum Bill under considerable scrutiny and criticism. There is also evidence that the tools to make wise natural resource use decisions—Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA)—are inadequately employed, lacking in public participation, and subject to political interference.

While section II sounds a number of alarms, it also highlights efforts on the part of the government to improve ENR management and address governance issues. MWE is determined in its efforts to raise the profile of ENR within the central government. It is trying to synergize initiatives that concern ENR across ministries and its own subsectors—through cooperation agreements—by combining its ENR and water supply and sanitation (WSS) subsector working groups. It is conducting an institutional review to improve ENR performance. It is undertaking an ambitious strategy to demarcate wetlands and forests. MAAIF is trying to do its part for the environment through a Sustainable Land Management (SLM) strategy.

The MWE recognizes the links between water management and Uganda's vulnerability to climate change and variability. The climate change adaptation strategy includes six water-related strategy elements including the need for improved land-use management practices based on Integrated Water Resource Management (IWRM). In fact, in 1999 the Government of Uganda began a series of reforms making IWRM the foundation for water sector management and development.

The analysis of environmental institutions closes with a discussion of the activities of civil society organizations (CSOs) in Uganda's ENR sectors. They are numerous, articulate, and present in all ENR sectors and issues, from forestry and wetlands, to climate and governance. They have participated in the MWE's Sector Performance Review and have had audience with the World Bank country office. Concerns about lack of transparency in oil development prompted those involved in governance to solicit international support for disclosure legislation for publically traded oil companies. The NDP acknowledges that community-based organizations (CBOs) are starting to demand more accountability from the country's environment management institutions.

Section III is composed of the three focus natural resource sectors: forestry, wetlands, and fisheries. Basic data and information for each of the sectors were obtained from the respective responsible ministries and agencies. In the case of forestry and wetlands, recent and ongoing work provided additional insights into management issues. In all three sectors, fieldwork specifically commissioned for this CEA was undertaken.

The forestry focus benefits from a recent (2010) review of the forestry sector institutions commissioned by MWE. Its findings describe the sector's management situation, and its recommendations provide a strategy to improve the situation. In summary, Uganda's forest resources are in decline because of poor management. The legal and institution structure of the forestry sector is sound but its institutions are handicapped by unbalanced funding and inadequate capacity, which prevents them from fulfilling their mandates. Moreover, it has

been plagued by political interference that has undermined its credibility in the eyes of the public and the donor community. To turn the sector around, forestry institutions—the NFA, Forestry Sector Service Department (FSSD), and the District Forestry Services (DFS) need to reestablish their credibility, secure adequate funding, collaborate, and return to their mandates as originally conceived.

Wetlands are still emerging from the era in which they were better known as wastelands. Certainly Uganda started to turn that image around when it joined the Ramsar Convention in 1988, and again in 1995 when wetlands were designated a public resource to be held in trust by the government. However, they are still viewed by many as useful only as reclaimed land. By virtue of being in public trust they should be protected, but regulating their usage has been thwarted by capacity gaps, legislative gaps, and political interference and corruption. The fact that they are without legally recognized boundaries increases their vulnerability to encroachment and conversion. A strategy to demarcate, and classify wetlands for eventual gazettelement, is under formation. The sector strategy work from the WMD informed the analysis in section III, as did the documented experience of NEMA in trying to protect wetlands, and the recent spatial analysis work by the WMD and World Resources Institute (WRI).

Fisheries production data indicate that the sector is under threat. In FY2003–04 total fish catch from all the lakes surged well over what has been generally considered the maximum sustainable yield for the Ugandan fisheries, and even further beyond the likely economically optimal yield. Production has since been on the decline and fish-processing plants are closing. Unsustainable fishing practices, and deterioration in the quality of local water bodies are responsible for declining fish stocks and species loss. Fisheries management authorities lack adequate funding and human resources to regulate the sector effectively. Insufficient data and information on non–Lake Victoria fisheries renders managers incapable of formulating appropriate lake-specific management regimes. Fish habitat and breeding grounds are stressed by pollution, wetland conversion, and catchment degradation. Aquaculture is being promoted to reduce pressure on the lakes, but it suffers from inadequate policy and technical support. Addressing problems in the fisheries sector would start with the passage and implementation of long-awaited fisheries legislation, and the formulation of strategies to support all capture fisheries and aquaculture. The fisheries focus work was informed by case study work done for this CEA plus earlier (2009) case study work. Both undertakings investigated fisheries co-management challenges at district and local levels.

Section IV is about Uganda moving forward to improve ENR governance. It summarizes the challenges and constraints to environmental management and governance that were identified in section III, and proposes actions to start improving governance (table 11.1).

In light of the diagnostic, and in consideration of ENR activity in Uganda by other DPs, the CEA wraps up with a discussion of a potential ENR agenda for the Bank. The Bank's Country Assistance Strategy (CAS) for Uganda, and the recently drafted Water CAS inform the proposed agenda.

Section I. Priority Sectors for Environmental Management

This section is about the economic value of the environment and natural resources (ENR). Economic valuation and comparison provide some insights into the relative magnitudes of natural resource incomes at risk of degradation.

Some ENR degradation costs are also calculated. These calculations show some of the hidden expenditures associated with the current level of degradation. These costs also represent foregone benefits of healthy and productive ecosystems.

Chapter 1 provides a brief situational overview of Uganda. Socioeconomic and development challenges are followed by short resource-specific discussions. The chapter ends with a look at climate change issues, and challenges faced by decentralized natural resource management in Uganda.

Chapter 2 provides economic analysis for the major natural resource sectors. It begins by looking at Uganda's *stock* of natural resource wealth. It then continues with the main business of the chapter, which is the economic valuation of annual natural resource income *flows*, and estimates of degradation costs. The chapter ends with the identification of the focus sectors for this Country Environmental Analysis (CEA): forestry, wetland, and fisheries—with special attention to non-Lake Victoria fisheries.

Chapter 1. The Economic and Environmental Context

Main Messages

- *Natural resource sectors will have difficulty meeting the National Development Plan (NDP) 2010 growth targets.*
- *Land degradation is widespread and barriers to reverse it are many.*
- *Forests are under severe pressure from wood fuel demand.*
- *Biodiversity in National Park areas is threatened by oil development.*
- *Water supply sources are threatened by land degradation.*
- *Wetlands important for water supply and subsistence are being lost.*
- *Fish catches have declined and stocks appear to be endangered.*
- *Decentralized capacity to manage natural resource management is undermined by inadequate funds and political interference.*

1.1 Overview of the Economy

Uganda's economy is driven by production from renewable and nonrenewable natural resources for domestic and export markets. The core natural-resource-based sectors are agriculture, manufacturing (fish, meat, and other food processing), mining, and tourism. Production from recently discovered oil and gas resources is expected to come online in the near future.

Uganda's gross domestic product (GDP) for FY2009–10 is \$17 billion (US\$34,580 billion). Agriculture—crops, livestock, forestry, and fishing—accounts for nearly 24 percent of Uganda's total GDP (UBOS 2010). It supports a large food-processing sector that accounts for about 40 percent of total manufacturing, and it employs about 80 percent of the working population. Primary agricultural commodities account for some 90 percent of export earnings. Coffee is the number one export; fish the second.

Uganda's population was estimated to be 32 million in mid-2010, implying an average annual per capita income of \$530. The national rate of population growth over the past decade averaged 3.2 percent per year (UBOS 2010). It is highest in the arid areas of the country such as Kotido whose growth rate is 9.7 percent, and Moroto and Nakapiripirit with a rate of 6 percent. These districts are found in the *Cattle Corridor*, which also contains some of the most vulnerable ecosystems in the country.

Natural resources will remain the primary source of livelihood for the vast majority of Ugandans for the foreseeable future. Hence, sustainable development of land and other natural resources is vital for economic growth and poverty reduction. Natural resources contribute not only products for trade and consumption, they also provide the supporting services upon which natural and human systems rely.

1.2 Socioeconomic Challenges

➤ *Poverty Reduction*

The most recent poverty data from a 2005–06 household survey indicate that 31 percent of the Ugandan population lives below the national poverty line of about \$30 per month

(US\$60,750).⁶ Rural poverty is about 34 percent; urban poverty 14 percent. Given that 85 percent of Uganda's population is rural, some 9 million rural people live in poverty. Regional rural poverty rates vary between 16 and 61 percent, with the highest rates found in the north and eastern regions, and decreasing toward the southwest.

Nearly half the country's population is below the age of 15 years, and the population structure is expected to remain youthful for the next 15 years. This coupled with low education levels is contributing to a high growth rate in the unskilled labor force, currently at 3.7 percent per year.

➤ *Food Security*

Most of Uganda's agriculture is rain fed and thus vulnerable to climate variability. Food shortages and nutritional deficiencies are common in many parts of the country where 40 percent of deaths among children are due to malnutrition. Some districts have noticed increasing malnutrition rates in children under 5 years of age.

The 2005–06 survey also estimates the number of households facing food insecurity. The data show that 62.1 percent of Ugandans do not get the recommended intake of 2,200 kilocalories per day. Food insecurity is higher in urban areas (72.7 percent) compared to rural areas (60 percent). But as most of the population is rural, the vast majority of food insecure persons are rural inhabitants.

➤ *Potential Internal Conflict*

Uganda is an ethnically diverse country, which increases its risk of divisions and conflict. Additionally, poverty is unequally distributed: highest in the north where people are still recovering from 20 years of conflict, and lowest in the central and western regions where agricultural production is higher value and modern economic sectors cluster around large urban centers. In the northern districts, due to prolonged conflict, agricultural production has not been exploited, and natural resources are heavily degraded and at risk to further degradation. There have been cases of conflict over dwindling water resources in drought-prone areas, and conflicts between pastoralists and farmers. There is fear of potential conflict in the western region, where land traditionally held by one ethnic group is changing hands (driven by oil investment), and shifting local power balances.

Avoiding the "oil curse" and associated internal conflict represents a significant challenge to Uganda. Global experience demonstrates that natural resource wealth in the context of poverty and weak institutions increases the probability of corruption, patronage, instability, and conflict. Whether Uganda's oil is a blessing or a curse depends largely on the establishment of an institutional framework that ensures fair and equitable distribution of resource rents and appropriate consideration of economic, social, and environmental issues.

1.3 National Vision and Development Plan

The strategy for national development is presented in the National Development Plan (NDP) for the period 2010–11 to 2014–15. The NDP (2010) is the first of six 5-year

⁶ UBOS 2010. The national poverty line is the average of the region-specific values for a basket of goods and services that meets basic monthly requirements. At the time of the survey that national average value was US\$39,746 per month; here it is adjusted for inflation to 2010.

medium-term plans to achieve the Nation Vision, that is, *a transformed Ugandan society from a peasant to a modern and prosperous country within 30 years*. This vision sees Uganda graduate to a middle-income country by 2017.

The NDP is the reference for fiscal strategy and lower-level government and sector plans. It replaces the Poverty Eradication Action Plan (PEAP) that ended in 2008–09. The theme of the NDP (the six NDPs will have different themes) is: *Growth, Employment, and Socio-Economic Transformation for Prosperity*. Consistent with the PEAP it continues to stress poverty reduction, but greater emphasis is placed on economic transformation, and in particular the removal of the constraints to that transformation.

The NDP entails an increase in the number of strategically targeted public investments, which are predicted to have a large impact on the growth in all sectors for an economy wide nominal growth rate that averages 7.2 percent per year. Recovery is forecast for the agricultural sector, showing an average of 5.6 percent growth per year over the NDP period. Table 1.1 shows the growth targets for key natural resource sectors.

Table 1.1 National Development Plan Growth Targets for Key Sectors

	2010–11	2011–12	2012–13	2013–14	2014–15
GDP (All)	6.7	7.0	7.2	7.4	7.5
Agriculture	5.7	5.8	5.4	5.6	5.7
Forestry	5.7	6.0	5.7	5.8	6.0
Livestock	5.4	5.6	5.2	5.4	5.5

Source: National Development Plan 2010.

Given the performance of the natural resource sectors over the past few years, achieving the NDP growth rates in those sectors will require a significant turnaround. As will be discussed in chapter 2, real growth rates across the ENR sectors are on the decline, largely due to degradation of the natural resource base.

1.4 Environmental Management Challenges

The high population growth rate combined with a predominately agrarian population struggling to survive puts high pressure on Uganda’s natural resource base. Soils, forests, water, wetlands, and fisheries are at risk to unsustainable farming practices, encroachment in fragile ecosystems, overharvesting, and pollution.

Land Degradation

An estimated 85 percent of the rural population depends on land for its livelihood. Over 95 percent are smallholder farmers cultivating, on average, 2 hectares of land. The majority have limited capital and knowledge to combat land degradation and adjust to climate variability and change. Agriculture is mostly rain fed and input use is low. Productivity is low, agricultural sector growth is flagging, and poverty and food insecurity persist.

Population pressure coupled with low and declining agricultural yields has the poorest farmers increasingly farming marginal land that is especially prone to degradation.

Land degradation is widespread and varies according to population pressure and the biophysical characteristics of the landscape. Soil erosion and nutrient depletion are the result of unsustainable farming and grazing practices, and the loss of vegetation due to fuel wood demand and agricultural expansion. Declining soil productivity and consequent reduced household incomes do not allow for land investment, even in the form of fallowing. The result is the perpetuation of inappropriate farming practices and increasing encroachment on forest reserves, wetlands, and riverbanks.

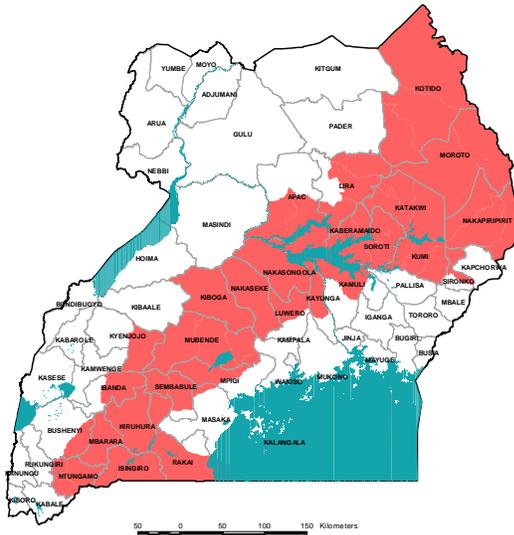
Around 36 percent of Uganda is affected by severe land degradation and 10 percent by *very* severe land degradation. Based on biophysical factors, four land degradation zones across the country have been identified. These are the Cattle Corridor, Southwestern and Eastern Highlands, Lake Victoria Crescent Region, and Eastern and Northern Uganda. The importance, characteristics, and degradation issues in these zones are summarized in figures 1.1 to 1.4. The Cattle Corridor is considered to be the most affected by land degradation because of its expanse, and because as a semiarid to arid hydroclimatic zone, it is water stressed and its ecosystems are fragile.

Barriers impeding the reversal or slowing of land degradation are multifaceted. Structural barriers reflect the incapacity of natural resource users to invest. Market and policy failures include the system of land tenure and the lack of land-use policies that renders farmers and pastoralists unmotivated to invest. Institutional barriers are those associated with the need for a coordinated effort to address land degradation when the institutions involved are many. Lastly, there are barriers associated with political interference and corruption.

The majority of poor farmers and pastoralists do not have the capacity to either invest in their own land, or in off-farm enterprises. The result is that household and farm productivity remains low or declines as land and fodder is continually exhausted. Smallholders who might be able to invest have very limited access to financial products and services. Market access is poor and transportation and transaction costs are high, which puts downward pressure on returns to farmers.

There is no Land Use Policy for the country as a whole. There is no Rangeland Policy or pastoral code for pastoralists who graze their cattle in the dry lands. The land tenure regime is complex and changes frequently due to ad hoc parceling of land to individuals and institutions. Absentee landlords hold large tracts of land for rent, with no motivation to conserve its fertility. Their tenants have no security and hence no incentive to make investments, and so essentially mine the land. In the last few years there have been cases of conflict between resources users due to the lack of clear property rights and management policies, exacerbated by harsh climatic conditions and dwindling natural resources, particularly water. Conflicts have occurred between pastoralists, and between pastoralists and farmers.

Figure 1.1 Cattle Corridor Land Degradation



Source: MAAIF 2010b.

Importance

- Covers about one-third of country's total land area
- Holds 80% of national cattle herd

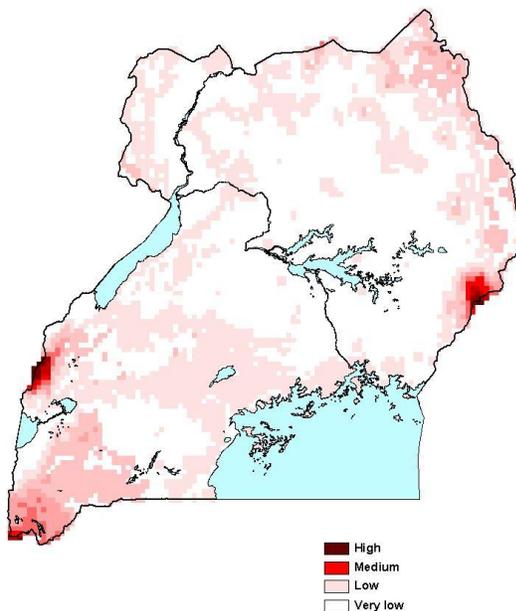
Characteristics

- Uganda's "dry lands"
- Carrying capacity of land in decline
- Export of fuel wood
- Low population density
- Low agro-ecological potential
- Low market access
- Poor infrastructure and access to information

Degradation issues

- Overgrazing and soil compaction
- Gully erosion
- Deforestation for charcoal
- Invasive grass species
- Climate change and variability, notably drought

Figure 1.2 Southwestern and Eastern Highlands Hotspots for Soil Erosion



Source: MAAIF 2010b.

Importance

- Highlands cover 25% of total land area and hold 40% of population
- Fatal and destructive landslides

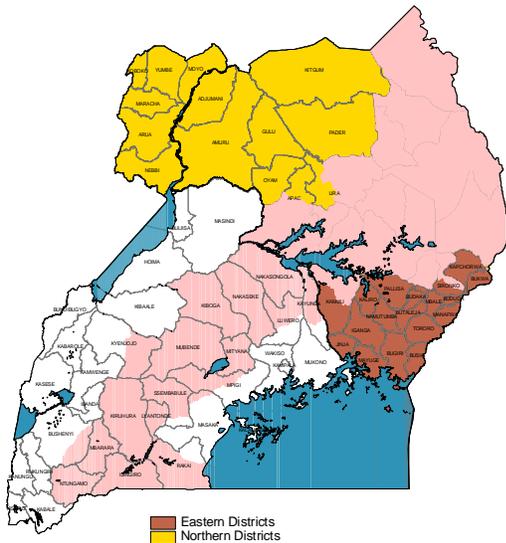
Characteristics

- Fragile highland ecosystems
- Very high population density: average 240 persons/km²
- Extensive land fragmentation
- High agro-ecological potential
- High market access

Degradation issues

- Inappropriate farming methods for steep slopes
- Nutrient depletion of soils
- Deforestation
- Eroded slopes susceptible to climate change and variability, notably precipitation

Figure 1.3 Eastern and Northern Uganda



Source: MAAIF 2010b.

Importance

- North: recovering from conflict and experiencing unprecedented poverty
- Both areas: high agriculture potential
- Both areas: poorest households in Uganda

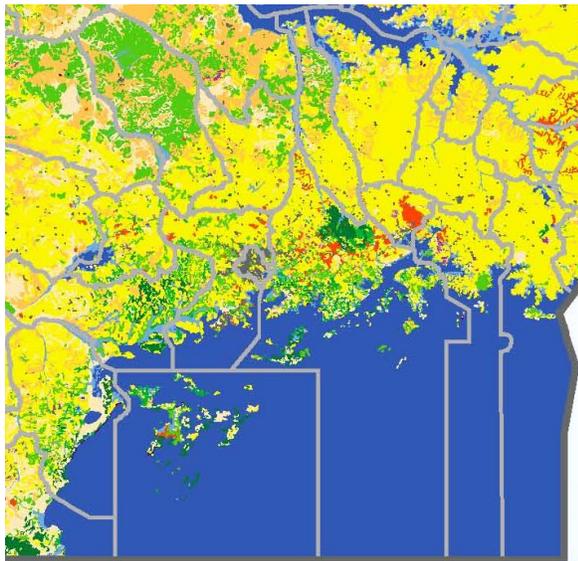
Characteristics

- East: areas of agricultural intensification
- North: areas of rapid ecosystem dynamics
- Both: high population density
- Both: high agro-ecological potential
- Both: high market access

Degradation issues

- East: nutrient depletion of soils
- East: wetland drainage: 20% of area's wetlands reclaimed
- East: deforestation
- East: increased flood and drought events due to wetland reclamation and deforestation

Figure 1.4 Lake Victoria Crescent



Importance

- Most urbanized region
- Extensive pressure on land and water based resources
- Basin catchment covers 16% of Uganda

Characteristics

- Cultivation of steep slopes, riverbanks, forests, and wetlands
- High population density: 180 persons/km²
- High agro-ecological potential
- High market access

Degradation issues

- Severe deforestation
- Wetland degradation on 75% of Lake Victoria's wetlands; 13% of wetlands severely degraded
- Overgrazing
- Exposed soils at risk to sheet and gully erosion

Source: Adapted from Land Use/ Land Cover map in NEMA (2009a).

Forest Resources

Uganda depends on fuel wood for 92 percent of its energy. It requires timber and other forest products for construction and domestic consumption. The forests support the biodiversity for a thriving tourism industry. They provide ecosystem services that maintain water quality and supply, and that prevent erosion and dampen the impacts of landslides and flooding.

In 1990 Uganda completed a biomass study of the country. The data indicated that between 1950 and 1990, the natural forest cover consisting of tropical high forests, woodlands, and forest plantations had declined drastically: over the course of four decades 63 percent of the forest cover had been lost, going from 13.2 to 4.9 million hectares. In 1990 forest cover accounted for only 24 percent of the land base.

The most recent biomass inventory for the country (2005) adjusted by ground proofing and extrapolation indicates that the inventory for 2010 stands at about 2.9 million hectares (FAO 2010), which represents a 40 percent loss of forest cover in just two decades. In 2010 forest cover accounted for only about 15 percent of the land base.

The current rate of deforestation (2005–10) is about 2.7 percent per year, or some 88,000 hectares per year. Most of it occurs on private or communally held forestland, which is nearly 70 percent of Uganda's forest cover. Public forestland—the permanent forest estate—accounts for 30 percent. It consists of Central Forest Reserves (CFRs) managed by the National Forest Authority (NFA); local forest reserves (LFRs) managed by the district governments; and national parks and wildlife reserves managed by the Uganda Wildlife Authority (UWA). Between 1990 and 2005, private forest area declined by 34 percent, while public forests area declined by 11 percent.

The Food and Agriculture Organization (FAO) estimates that in 2010 Uganda had 51,000 hectares of forestry plantations. Since 2005 the planting rate has been about 5,000 hectares/year (ha/yr) and the cutting rate is less than 1,000 ha/yr. This trend is a reversal of what occurred in the pre-2005 period when cutting exceeded replanting. As a result of that earlier trend, most of the sizeable timber plantations are now below 6 years old. As the rotation age for harvest for timber is 20 years, it will be a decade or more before these are harvestable. This is of concern because if timber requirements are to be met from domestic plantations, about 4,000 hectares are needed for annual harvest, at current levels of demand.

The Government of Uganda wants to reverse the degradation trend in forestry. In the NDP the governing objective for the forestry sector is restoration of forest cover to its 1990 level by 2015.

Biodiversity

Uganda possesses a rich natural endowment of forests, mountains, and waterways, as well as some of the richest assemblages of biological diversity in Africa. Harboring 11 percent of the world's bird species and more than 7 percent of total world mammals, including the famed Mountain Gorillas. Uganda has pursued an ambitious program of protection and conservation that has resulted in an extensive system of protected areas. This system includes 10 national parks, and 29 game reserves, sanctuaries, and controlled hunting

areas. The nation's forest reserve estate complements the protected area system, which is also potentially important to biodiversity maintenance.

Until the early 1970s, Uganda's protected areas served as the basis for a well-established tourism industry that was the country's third-largest foreign exchange earner. Subsequent political strife resulted in the deterioration of a significant proportion of the country's protected area system. Also, wildlife poaching, encroachment in protected areas for food crop production and livestock grazing, and land clearing for human settlement have all taken a heavy toll on the natural resource base.

Degradation in the physical infrastructure that had previously supported a vital tourism industry threatened the overall sustainability of the protected area system. Wildlife disappeared, tourism revenues fell, habitat became degraded, and local populations—through poverty and economic necessity—reverted to further nonsustainable use of local resources. In spite of these historical trends, the rather extensive system of protected areas remains in good enough condition that, if properly managed, will provide opportunities for sustained economic growth and local poverty alleviation, as well as to ecological goals such as the maintenance of globally important biodiversity.

In recent decades, most forest degradation has occurred outside the protected areas. But protected areas and the biodiversity contained therein are coming under threat in Uganda's Albertine Rift area. This area rich in biodiversity harbors over half of Uganda's protected area and 84 of its centrally managed forest reserves. The reserves are small in size, few exceeding 50 square kilometers (km²) but together with the parks, they provide important corridors for biodiversity moving between the parks. Oil and gas development in the area through its direct and indirect impacts threatens the integrity of the corridors, and the overall biodiversity of the area. Hence, the issue of forest corridor conservation and restoration is critical for biodiversity conservation in this particular area of the country.

Oil and Gas in the Albertine Graben

In 2006 it was officially announced that there is oil in Uganda. Most estimates of potential reserves were at 2 billion barrels. This was a boon for economic development in the country, except for two caveats: (i) land-use conflict between an extractive industry and ecotourism, and (ii) a weak institutional structure to protect the public good. Nonetheless, the oil and gas sector is a priority in the NDP. Priority infrastructure interventions include the construction of oil refinery capacity, and a pipeline from Eldoret to Kampala. Exploration activity will continue to increase potential extractive capacity to 2 billion barrels and appraisal drilling is expected to start in mid-2011.⁷

Currently there are 44 licensed exploratory wells and all are located in the Albertine Graben, the western arm of the Great Rift Valley. The Albertine Graben stretches in a northeast direction from the Uganda–Democratic Republic of Congo border to the Uganda–Sudan border, covering 23,000 km². It has several lakes including Albert, Edward, and George. Coming from the highlands, many rivers drain into these lakes, the main ones being the Semliki and Victoria Nile.

⁷ Announcement by Tullow Oil, United Kingdom, one of the main companies operating in the area. The others are Tower and Dominion also of the United Kingdom; and recently the China Offshore Oil Company and Total France acquired oil real estate in the area.

The Albertine Rift area is considered possibly the most biologically diverse area in all of Africa. It has high tourism potential and consequently most of Uganda's protected area is located there. Twenty-one percent of the Graben's total land area has protected area status as national park or wildlife reserve (14 percent), or as forest reserve (7 percent). The area includes the country's two most important national parks: Queen Elizabeth and Murchison Falls. The rest of the Albertine Graben area (79 percent) is agricultural.

The discovery of significant oil and gas reserves is a great opportunity for development in Uganda if the income of this nonrenewable resource is invested for sustained economic growth, and if the country's other natural assets—namely those contained in the Albertine Graben—are not diminished or destroyed in the oil and gas development process.

Investment of the oil income for the future will require some kind of transparent and equitable revenue-sharing agreement between the central government, and local governments and populations, which has yet to be developed. Protecting the Albertine Graben's natural resources—and tourism industry—requires effective application of existing environmental regulations, and the development of policy and planning to address the specifics of the sector and the region. The latter would include a Biodiversity Policy, and a Strategic Environmental Assessment (SEA) supported by a strengthened project-level Environmental Impact Assessment (EIA) process. An SEA is not yet available, and the project-level EIA process—which has been criticized for deficiencies, political interference, and lack of transparency—remains insufficient given the cumulative impacts of nascent sector on the region.

The direct impacts of the sector's development are the disruption to animals and biodiversity from the conversion of protected wild areas for oil and gas activities and human settlements, and the accompanying noise, water, and air pollution to the receiving ecosystems. Indirect impacts concern the influx of people to the region, facilitated by new roads and social infrastructure such as health, housing, and school facilities. The indirect impacts will exacerbate pressure on all local resources—overfishing is already a problem, there is concern over the fragmentation of animal corridors, and there are reports of encroachment and poaching in protected areas.

Management challenges are significant given the current lack of a comprehensive, strong, and transparent institutional structure to assess, mitigate, and minimize environmental impacts, and to safeguard the long-term benefits of the development for local communities, as well as the country as a whole. The sector is new, environmental management capacity is weak, land speculation is challenging land tenure arrangements, many of the institutional structures for managing an oil and gas sector have yet to be developed, and the political will to do the right thing is suspect.

Minerals

More than 130,000 Ugandans work as artisans and small-scale miners and at least 700,000 more people are indirectly employed in transport, marketing, food vending, and equipment supply. More than 100,000 of the miners are working in "industrial mineral" production including salt, clay, sand, aggregates, limestone, and slates, and almost 50 percent are women. Most mining activities in the country, especially those carried out by local investors and artisans, use inappropriate technologies. This is largely due to low

availability and high cost of mining plants and equipment on the domestic market. Use of inappropriate technologies is responsible for low productivity of the sector and environmental degradation.

Water Resources

The World Bank recently prepared a (draft) Country Water Assistance Strategy for Uganda. Box 1.1 lists the challenges identified in the strategy.

The total water resources available, according to the recent National Water Resources Assessment (NWRA) by the Ministry of Water and Environment (MWE), is about 43.1 billion cubic meters per year (BCM/yr). It includes surface water from net runoff (rainfall minus evaporation) and estimated groundwater. Lake Victoria accounts for most of the surface water, 32.86 BCM/yr, but it is committed to existing and planned hydropower projects along the Victoria Nile from Lake Victoria to Murchison Falls. Excluding Lake Victoria, available water resources fall to 10.2 BCM/yr, of which surface water runoff is 4.55 BCM/yr and sustainable groundwater yield is 5.67 BCM/yr.

Due to the spatial and temporal variability of rainfall, many parts of the country are water stressed over periods of the year. Mean rainfall is 1,200 millimeters per year (mm/yr) but it varies between the humid and semi-arid regions, ranging from over 1,500 mm/yr in the extreme south of Lake Victoria, the Rwenzori Mountains in the west, and Mt. Elgon in the east; to less than 600 mm/yr in parts of the northeast. The majority of the country (particularly the south) generally has two distinct wet and dry seasons, and the north generally has one long wet season and a short dry season.

Potential evaporation rates are high: rates for some 75 percent of the country range from 1,350 to 1,750 mm/yr. In 90 percent of the country, evaporation exceeds precipitation, and in 50 percent of the country, the deficit is up to 400 mm/yr. Only the Lake Victoria shores and the high mountainous areas experience a rainfall surplus. High rates of evaporation reduce runoff, groundwater recharge, and dry season stream flow, resulting in a high degree of seasonality in stream-flow regimes, reduced surface water storage, and increased crop water demand.

Climate variability contributes to water stress, especially in a country highly dependent on rainfed agriculture. The frequency of droughts and gravity of associated impacts has increased. The prolonged drought of 2004–06 caused water shortages across the country and lowered water levels in surface water sources including Lake Victoria, which affected hydroelectric power production, agriculture, navigation, water supplies, fisheries, and industry. Frequent droughts have lowered water tables reducing groundwater availability, and drying up point sources such as wetlands and gravity-fed irrigation schemes. In the Cattle Corridor, severe droughts lead to animal loss and food insecurity and conflict over access to dwindling water resources.

The degradation of water supply sources in Uganda is linked to a host of factors: erosion from unsustainable land use practices, deforestation, unsustainable abstraction from groundwater sources, and wetland degradation. Lake Victoria is particularly affected by pollution from domestic and industrial waste, agricultural runoff, and poorly constructed sanitation facilities.

To illustrate, a baseline water-quality study of the Sio-Malaba-Malakisi Basin found poor color, high turbidity and silt load, and high levels of faecal coliforms. It concluded that the water quality is affected by deforestation, intense cultivation with soil loss, cultivation of riverbanks, overexploitation of biomass, high population density and growth rates, poor sanitation, land fragmentation, agricultural and industrial water pollution, flooding, widespread extraction of sand and clay, settlement along the river flood plains, and urban development with a lack of water-borne sewerage systems (MWE 2010c).

Pollution of water resources—surface and aquifer—is a growing problem. Landfill leakage into groundwater resources has been reported. Industries and municipalities are the main pollution sources of wastewater discharge into the water bodies. The level of compliance with national wastewater discharge standards is estimated at only 40 percent. The largest quantity of this wastewater discharge is untreated sewage from Kampala.

Siltation hampers the success of initiatives to increase the supply of water for production (WfP) in storage facilities such as valley tanks, fishponds, and reservoirs. A survey in 2008 of 20 districts showed that WfP facilities were only 23 percent functional. In one-third of the cases, reduced functionality was due to siltation as a result of land use in the catchment area. Sparse or no vegetation cover and poor soil retention causes the siltation of these facilities. In some districts efforts have been made to sensitize stakeholders about the impacts on water supply of degradation of vegetative cover. One district has enacted by-laws complete with penalties for environmental degradation.

Box 1.1 Challenges Related to Water Resource Management in Uganda

Wetlands. Under threat particularly due to conversion near urban areas for settlement and industry, and for agriculture in seasonal wetlands.

Water quality. Surface and groundwater are deteriorating due to domestic and industrial wastes, agricultural runoff, and poorly constructed sanitation facilities. Watershed degradation contributes to both land and water quality problems.

High existing climate vulnerability. There is a statistically significant increasing trend in the frequency of climate-related disasters, primarily floods, often with devastating impacts.

Additional challenges of climate change. These are expected to place additional pressure on Uganda's already-fragile water resource base (especially given the implications of increasing temperature on the water balance of Lake Victoria and Uganda's wetlands). The distribution and timing of water resource availability will become an even greater challenge with rising population, urbanization, and economic growth.

Competing water uses. In six of the eight priority subcatchments surveyed by MWE during the NWRA, water conflict was the most-frequently-cited issue.

Regional context. Uganda's water resources are part of the overall Nile Basin and the trans-boundary dimension adds additional complexity and opportunity to its management.

Source: World Bank Uganda Country Water Assistance Strategy, Draft May 2011.

Wetlands

Wetlands represent one of the country's vital ecological and economic natural resources, and constitute about 11 percent of the total land area of Uganda, about 26,000 km². The most common wetlands are seasonally wet *grasslands*—about half of total wetlands area.

Seasonally wet *woodlands* account for 16 percent; and *permanent* wetlands—near open water bodies—account for about 15 percent. It is estimated that wetlands provide some 320,000 workers with direct employment, and 2.4 million people with subsistence employment.

Wetlands provide domestic and livestock water supply. They provide forage for animals, and food security during dry periods. They provide wood fuel, and plant materials for construction and artisanal crafts. Vital wetland ecosystem services include water supply and filtration, groundwater recharge, waste treatment, sediment retention, flood control, and climate modulation.

Wetlands are also a common property resource under threat. Population pressure coupled with the absence of effective management structures is causing their degradation. Uncontrolled land reclamation for agriculture, industrial activities, and human settlement are the main factors. Degraded wetlands threaten water supplies, and increase the risk of flooding of the sort that occurred in eastern regions in 2007 and 2010. Wetland resources are particularly important for subsistence activities, hence wetland degradation disproportionately affects the economic security of the poor.

Fisheries

Five major lakes account for the bulk of Ugandan fish catch: Victoria, Albert, Kyoga, Edward, and George. Lake Victoria is the most important water body in terms of both its size and contribution to fisheries production. Its share of total recorded catch is about 60 percent.

While the sector employs about 300,000 people directly, there is at least 1.2 million in secondary and tertiary industries. Fish is important for subsistence and food security; it is an important source of protein, with per capita consumption around 10 kilograms/person/year.

In recent years, fish catches have declined. The fisheries sector growth started a marked upward climb in the mid-1990s and peaked in FY 2004–05, when its year-on-year growth reached 13.5 percent. After that period, annual growth became negative but seems to have stabilized in 2009. Catches from Lake Victoria are falling, while those in lakes Edward and George are almost becoming extinct. Lake Kyoga catches have dropped from 150,000 tonnes in the 1980s to about 60,000 tonnes in 2007. Eight out of the previous 18 fish-processing factories have closed and others are threatened with closure (MAAIF 2010a).

Beyond the biological factors, the causes of the decline include inadequate regulatory structures to control destructive fishing practices and illegal fishing gear and to prevent fishing in, and the destruction of fish-breeding grounds. At current trends, catches are unlikely to sustain the growth rates in domestic or export demand.

Indoor Air Quality

Biomass fuels meet over 90 percent of Uganda's energy needs. Using inefficient devices, in poorly ventilated spaces, the urban poor and rural populations depend on biomass fuels for their basic needs for cooking water and space heating. Women and children are particularly exposed to the detrimental health effects of indoor smoke inhalation: acute respiratory infections in children and chronic diseases in adults. Small industrial energy

consumption is also met mostly with biomass combustion, with its attendant inefficiencies and health threats.

1.5 Climate Change, Variability, and Vulnerability

Climate change models for Uganda point to an increase in temperature in the range of 0.7° C to 1.5° C by 2020. The models predict a likely increase in the variability of rainfall with most areas probably getting higher rainfall. These changes will have impact on agricultural production and food security, which in turn will have a significant effect on employment levels particularly in the agriculture sector. Although the predicted climate change is not as damaging and extreme as in many countries, Uganda is judged to be among the most vulnerable and least climate resilient due to poverty and low income diversity.

A historical analysis of climate variability was prepared for the World Bank's Uganda Country Water Assistance Strategy. The historical analysis found that while there is a trend in climate-related natural disasters—floods, landslides, droughts—they have more to do with human and ecosystem vulnerability, than a change in year-to-year precipitation variability. There is, however, an unequivocal warming trend in between 1901 and 2006.

While floods and droughts are phenomena resulting from natural climate variability, the scale and nature of the water system in Uganda suggests that these impacts should be more manageable than they are at present. The hitherto lack of focus in water management planning in conjunction with climate variability and risk has exacerbated the frequency and magnitude of the impacts. Comprehensive and sufficiently detailed flood- and drought-risk maps do not exist for Uganda, in part because existing topographic maps (and available digital elevation models) have vertical scales too large for such mapping. Analysis of groundwater availability is now available but these maps also need to be more detailed to support drought contingency planning at the district and sub-district levels. There has been very little planning to develop ways to adapt to variable rainfall deficits in agriculture and drinking water supply.

The Participatory Rural Appraisal undertaken for the preparation of the National Adaptation Programme of Action (NAPA) underlines perceptions of vulnerability to climate:

Drought is the single most important and widespread disaster in Uganda. It is increasing in frequency and severity, particularly in the semi-arid areas (Cattle Corridor). The rural poor, whose livelihoods are dependent on natural resources, are directly most affected. Storms, heavy rains and floods are the second most important group of disasters. [These] disasters negatively impact on key sectors such as water resources, health [including loss of life and injury], soils, wildlife and infrastructure.

Several severe droughts have occurred in the Cattle Corridor. Floods have mainly occurred in the Teso, Tororo, and West Nile sub-regions. Severe flooding in 2007 affected 22 districts in the eastern region; and in 2012, districts in the same region suffered devastating landslides off Mt. Elgin. The impacts of all of these events were exacerbated by land or wetland degradation, or deforestation, or some combination of the two in catchment areas involved.

Adaption to climate variability and reduction of vulnerability through the application of Sustainable Land Management (SLM) practices has been adopted on only a small percentage of agricultural land. An informal survey by the Uganda National Farmers Federation (UNFFE) of villages in 20 districts found that although awareness of climate vulnerability (and change) is high, there is a lack of knowledge of what to do. Farmers believe that they cannot depend on their previous calendar, nor do they have access to knowledge about how to react under changing climatic conditions. A 2009 study of 12 northern communities by the International Food Policy Research Institute (IFPRI) and Makerere University also found that there is a high level of awareness of climate variability and its affect on livelihoods. Furthermore, the survey showed that when SLM practices to address moisture stress and rainfall variability are shown to be effective, communities adopt them. About half of the villages surveyed had started using mulch and manure, and planting trees.

The Makerere study also uncovered an alarming social dynamic leading to an increase in climate vulnerability in the northern districts. In Moroto where pastoral livelihoods have always been practiced, communities were switching to crop production. The change was in response to cattle rustling and insecurity in northeastern Uganda. But in this region that falls within the dry Cattle Corridor, crop production is riskier than livestock rearing. This underlines the need for the delivery of context-specific climate change adaptation information.

1.6 Local Governance Issues

In 1993 Uganda adopted the decentralization policy as an instrument to deliver subnational development, with the aim of bringing services closer to the people. Decentralization envisioned good governance, democratic participation, and decision control by local communities. Under this policy, planning, budgeting, administration, fiscal management, and administration of justice in local council courts were accorded to district governments.

The quest for bringing services nearer to the people has raised pressure for creation of more districts leading to continuous splitting of existing ones. The consequence has been increased public administration expenditure, and the requirement of new structures to manage split natural resources. In 2002 there were 56 districts; in 2008, 80. At the time of this report there were 113 districts.

Decentralization is undermined by political interference from the central government by way of appointments from the center of key local positions in both local government and local administration. Local dependency on conditional funding from the central government further erodes the autonomy promised by decentralization.

The constraints to the performance of local governments was summarized in the NDP 2010:

- Inadequate financial resources.
- Inadequate human capacity.
- Political interference with resource management and decision making.
- Limited autonomy in the use of funding from the central government limiting the ability of local governments to respond to area-specific needs.
- Weak and conflicting policy, legal, and regulatory frameworks.
- Institutional and structural challenges limiting service-delivery capacity.
- Weak private sector capacity to deliver contracted public services in rural areas.
- Limited vertical and horizontal coordination within and across sectors for effective implementation of programs and activities.

Chapter 2. The Economics of Environment and Natural Resources

Main messages

- Uganda's greatest per capita natural resource wealth is in farmland, followed by oil reserves and protected areas.
- Increasing water productivity could double annual income of rainfed agriculture.
- Annual income flows from forests are underestimated by minimally \$150 million: 25 percent of recorded forestry income.
- Annual income flows from wetlands are potentially \$232 million.
- Indoor air pollution carries significant costs of \$429 million.

2.1 The Asset Base: Importance of Natural Capital for Uganda's Wealth

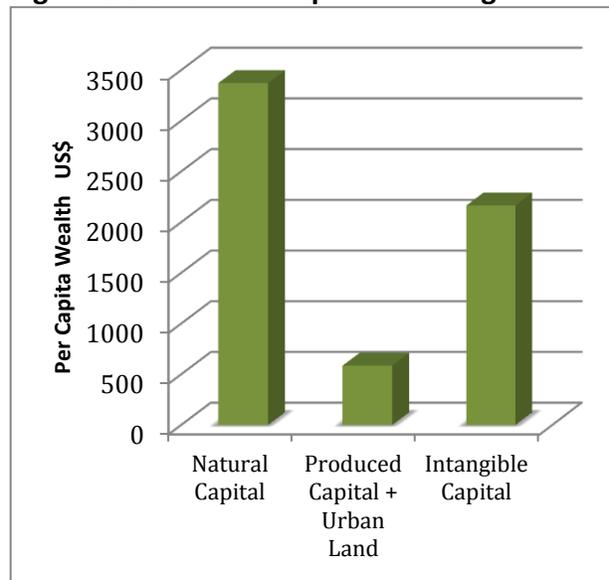
A country's wealth is the asset base on which its income depends. Its total wealth consists of three basic types of assets: natural capital (forests, farmland, minerals), produced capital (machinery, equipment), and intangible capital (education, health, laws). The development process increases the sum of the three, and in doing so, the relative contributions of the wealth categories change. Most countries start with a high dependence on natural capital (natural resources) that over time is transformed into other forms of capital: factories and urban centers, institutions, and a skilled workforce.

The World Bank is working on methodologies to calculate the wealth of nations (World Bank 2006; 2011a). Figure 2.1 shows the Bank estimate of the composition of Uganda's wealth as of 2005. The sum of the categories yields a total per capita wealth of nearly \$6,000. This represents a lower bound primarily because natural capital is underestimated: Uganda's newly found oil assets are not included, nor are her fisheries and water resources.

Despite the data gaps, the wealth estimate provides information about Uganda's asset portfolio. Most of Uganda's wealth is in natural capital, and figure 2.2 shows its breakdown—with the omission of oil, fisheries, and water resources. As in most developing countries, agricultural land is the most important form of natural capital. It is also the source of income for the majority of the people. It is therefore clearly a priority. Wealth in timber appears nearly exhausted, and although this estimate is controversial, to some extent, it reflects the liquidation of forest resources known to be occurring.

Sustainable development obliges total wealth to increase over time, to accommodate an increasing or at least constant *per capita* level of wealth. If that does not happen, the asset base, usually the natural capital is being

Figure 2.1 Wealth Composition of Uganda

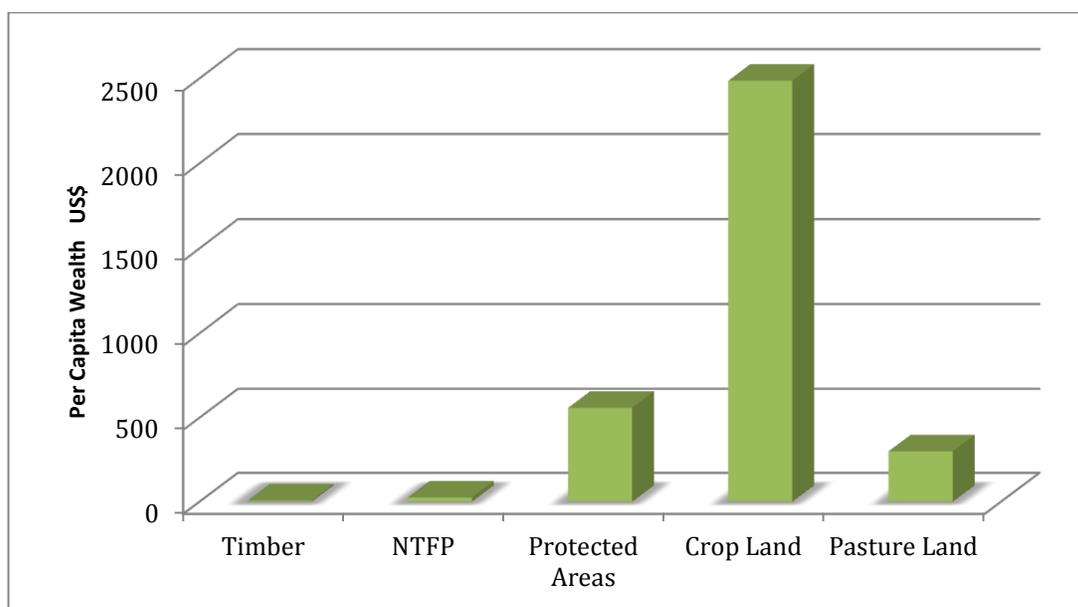


Source: World Bank 2011a.

liquidated. In the case of nonrenewable resources such as oil and gas, their exploitation *means* that they will be liquidated. But if that nonrenewable natural wealth is transformed into productive and intangible forms of wealth, total wealth need not decrease.

Oil exploration companies have announced that Uganda’s oil and gas potential is 2 billion barrels. Limited oil production (for power generation) could start in 2011. Full-scale production of 150,000 barrels/day is not likely to begin before 2016, and could continue for 20 years. Assuming an average oil price of \$100 per barrel, government revenue at peak production could be around \$3.8 billion per year (bil/yr).⁸ By way of comparison, Uganda’s current gross domestic product (GDP) is \$17 billion.

Figure 2.2 Components of Natural Capital in Uganda



Source: World Bank 2011a.

Note: NTFP = nontimber forest product.

Using the above information, a rough estimate of the asset value of Uganda’s oil resources is calculated as the present value of government revenue—over the life of the reserve. Assuming full production levels for 20 years after 2016 and a 6 percent social discount rate, the net present value (NPV) of the oil resource is of the order of \$40 billion. The implied *per capita* oil wealth is about \$1,240, which is still only half the per capita wealth in farmland (that is, \$2,485).

In spite of the promising oil discoveries, agricultural land remains the most important natural asset in Uganda. Protected areas are also an important component of the country’s asset portfolio and, like farmland, if maintained it will continue to be an asset long after nonrenewable oil and gas reserves are exhausted. On the other hand, wealth in forest resources has been liquidated in recent years, and requires rebuilding. Fisheries and water

⁸ Based on World Bank (2010a); high-case scenario for oil production to illustrate potential fiscal impact.

resources (wetlands, lakes, rivers), although not included in these wealth estimates, are also vital resources that have been diminished in recent years.

Uganda's biggest challenge is to use its wealth of natural capital to create other forms income generating assets. In most developing countries wealth creation is dominated by intangible capital: improvements in human resources, institutions, governance, and technology. It is the increase in intangible capital that will support the more efficient use of natural and produced capital, and lead to higher levels of consumption and wealth (World Bank 2011a). Governance is the most important component of intangible capital because of its direct linkages to increased community participation in decision making, planning, implementation, monitoring, and the subsequent evaluation of programs and income generation at the community level.

2.2 Income Flows from Natural Resources, and Costs of Environment and Natural Resources (ENR) Degradation

The valuations in the following sections are of two types. The first group represents resource benefits currently being realized: the income from natural capital. This is the annual income at risk to degradation of the natural resource base on which it depends. In the second group are indicative degradation costs, which include the costs of soil degradation by erosion, water and air pollution, and the damages due to climate variability in already compromised landscapes.

Some of the income from natural resources is found in the statistical accounts of the Uganda Bureau of Statistics (UBOS). These are the values of natural resource products that pass through formal markets. Others do not pass through formal markets, but form an important part of total economic income for the country. They are products that are traded locally, or used directly by households harvesting or collecting them. In the case of fuel wood and charcoal, the UBOS uses survey methods to calculate estimates of the value of informal trade. But in the case of other nontimber forest products (NTFPs), or wetland products, there are no systematic methods of collecting data and estimating values. For these products other methods are used, usually based on case study survey work.

Valuation for some ecosystems services has been undertaken. For wetlands, the provisioning services of water, fodder, and papyrus were estimated, and an example of the regulating service of wastewater treatment was provided. Forests are known to provide important regulating ecosystem services for water supply and quality, erosion control, and climate. But linkages at a large scale are unknown. Hence, two indicative valuations are provided: water supply to villages beside forests and the cost of one landside event that was blamed on upland deforestation.

2.3 Agricultural Sector Income

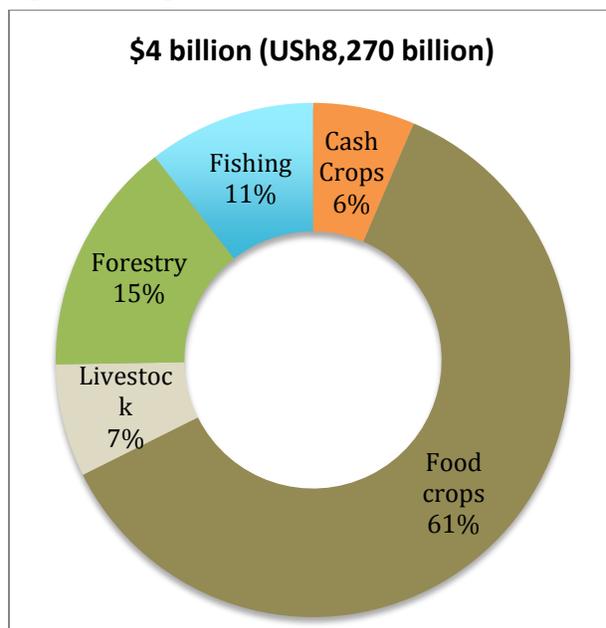
The agriculture sector as reported in the national accounts includes cash and food crops, livestock, forestry, and fishing. The sector as a whole accounts for \$4 billion—24 percent of Uganda's GDP. Figure 2.3 shows the subsector percentage shares for 2009–10. At \$2.5 billion, food crops account for 61 percent of the sector.

The real growth rates of subsector incomes over the past few years have been low, if not negative. As a whole, the sector's real growth fell from a high of 7.9 percent in FY2000–01

to 0.1 percent in 2006–07. It has since recovered slightly to about 2 percent in FY2009–10; however, it still remains below the national population growth rate of 3.4 percent.

The low growth in agriculture is evident in all its subsectors, particularly food crops and fishing. The nation depends on agriculture: 85 percent of the population is engaged in it, food processing accounts for most of the manufacturing sector, most of the export earnings are from agriculture, and agriculture-led growth is the main strategy to achieve the Millennium Development Goal (MDG) of halving poverty by 2015. Hence, sustained growth in the agricultural sector is necessary. But at food crop growth rates of the past few years averaging only 2.7 percent, the number of poor people is projected to increase from 8.5 million in 2005 to 10.2 million in 2015 (MAAIF 2010a), which means the MDG poverty reduction goal will be difficult to achieve.

Figure 2.3 Agriculture Sector Shares



Source: UBOS 2010.

2.4 Forestry Resources Income at Risk

As is the case with most natural resources, the full economic contribution of forests is not entirely represented in the national accounts. Forestry goods and services that are not exchanged in formal markets are unrecorded. The UBOS and National Forestry Authority (NFA) do make estimates of nonmonetary fuel wood use, but most other NTFPs for household and artisanal use are not estimated and hence unrecorded. Forests support the tourism sector and contribute to livestock, but these services are not attributed to forests. Nor are the various ecosystem services provided by forests, including water retention and filtration and erosion control.

Forest Products as per the System of National Accounts

According to Uganda’s System of National Accounts (SNA), forestry will contribute 3.6 percent to GDP in FY2009–10, about \$600 million. Production data recorded by the UBOS consists of sawn timber, poles, fuel wood, and charcoal. From the late 1980s to 2002, forestry sector growth was robust, averaging about 6 percent per year. Since 2004, however, sector growth has declined to under 4 percent, and is estimated to be about 2.3 percent in FY2009–10. The downward trend is related to declining forest stocks due to the conversion to agriculture of degraded forestland, and overharvesting of forest areas for fuel wood, charcoal production, and other forest products.

Nontimber Forest Products (NTFPs)

About 2.7 million people live in parishes adjacent to forest reserves and another 6 million live within access of private forests (APRM 2007). The biodiversity of these forests contributes to the annual income of adjacent households through the harvest of NTFPs: firewood, food (bushmeat), construction materials (rattan, bamboo), materials for handicrafts, and medicinal herbs. NTFPs also result from forest activities such as apiculture and tree seedling cultivation.

Most NTFPs do not pass through formal markets because they are either for household use, or they are sold or traded in locally. Hence, while they represent an important source of income to local populations, their value is unreported.

Nonmonetary household firewood is an important NTFP, and its volume is estimated by the NFA and UBOS. This study presents those estimates, and adds to them an estimate for the other NTFPs.

The NFA commissioned Bush and others (2004) to provide an estimate of the national importance of NTFPs. To that end, household survey work was done in four different types of forest, under different management regimes: a tropical high forest (THF) reserve, a private THF, a woodland reserve, and an afro-montane national park (Rwenzori). At 2010 prices, the estimated NTFP values per hectare (ha) were: \$7/ha in the THF reserve, \$8/ha in the private THF, \$10/ha in the woodland reserve, and \$105/ha in the afro-montane national park.⁹ These estimates were applied, according to forest type, to the 2005 forest cover data in the National Biomass Study (2009). The resultant estimate indicates that the total economic value of NTFPs could be as high as \$63.2 million per year (mil/yr) (US\$128 bil/yr).

Tourism

Forests are vital to ecotourism in Uganda. Without the forests and biodiversity they support, there would be no significant ecotourism sector. Under national accounting conventions, tourism value attributable to forests is subsumed within other categories of the national accounts, mostly within the service sector. Additionally, there is tourism income that does not reach the national accounts because it occurs outside of the formal market. Presented below is an estimate of the benefit of forests through their support of the tourism industry.

Tourism is driven by Uganda's system of national parks and wildlife reserves. As such, the starting point is the Uganda Wildlife Authority (UWA), a semi-autonomous agency charged with the management of Uganda's Protected Area System that has been in operation since 1996. This system includes 10 national parks, 12 wildlife reserves, and 14 wildlife sanctuaries. Financial sustainability is a goal of the UWA, and in 2009–10 it covered 70 percent of its operation costs. The largest portion of the UWA's revenues come from park entrance fees, game viewing fees, and gorilla and chimp tracking fees. Currently these items

⁹ This surprising large estimate—compared to the others—was statistically significant. It may be explained in part because the population adjacent to the park derives one-third of its income from the forest. Most of that forest income (70 percent) is from NTFPs other than fuel wood, and most of it is consumed by households. Compared to the other three regions, the Rwenzori villages are the most reliant on the forest for household consumption. Also, the Rwenzori National Park is rich in biodiversity and potential NTFPs.

account for 74 percent of its revenue net of grants or other forms of assistance. Real growth in UWA receipts since 1998 has averaged 13.6 percent per year. Revenue in 2009–10 was \$10.5 million (US\$21.2 billion).

The UWA revenue is a direct benefit of the protected forests and the biodiversity contained therein. But the total value of forests for tourism goes well beyond the receipts at the park gates. Tourism expenditure contributes to GDP in terms of its impacts on the service industry, and on retailers and artisans working on the tourist circuit. These are the direct or primary benefits of tourism. Indirect—or secondary—benefits accrue to the industries that supply goods and services to tourism businesses. There are also induced effects that arise from the re-spending of household income that was earned from tourism or its supporting industries.

The total value added by the national parks to tourism in Uganda is the estimated total value of tourism expenditures, including secondary impacts, less the cost of inputs to earn tourism revenue. The calculation is based on current tourism data for visitors to the national parks, survey data on foreign and domestic tourist travel expenditures, and leakage and multiplier parameters developed for Uganda by Moyini and Uwimbabazi (1999).¹⁰ The result for 2010 is \$78.4 million (US\$158 billion), almost eight times the value of the UWA's receipts.

Ecosystem Services: Watershed Soil and Water Protection

The Food and Agriculture Organization's (FAO's) Global Forest Resource Assessment in 2005 noted:

As watershed land cover, protected or well-managed forests are without equal in increasing hydrological and erosion safety and water quality: water may well be forests' most useful and important product.

Forests maintain high water quality by minimizing soil erosion on-site—which reduces sediment in water bodies (wetlands, ponds, lakes, streams, and rivers)—and by trapping and filtering water pollutants. The effects of forests on available water supply depend on tree species and forest extent—fast-growing exotics, for example, can actually reduce the amount of water available for ground water recharge.

Erosion decreases the water storage capacity soil, and its permeability. As a result, water loss occurs through subsurface drainage and surface runoff. Transported and deposited sediment reduces the capacity of water storage facilities. It impairs water for domestic, industrial, and navigational uses; raises riverbeds and lake bottoms endangering aquatic life; increases the costs of hydroelectric power provision; and results in landslides damaging property and endangering human life.

On sloping land, tree roots and the other vegetative biodiversity of forests and woodlands provide a natural barrier to erosion. The ground cover of forests controls runoff, which reduces topsoil loss and downstream sedimentation. In controlling soil erosion, on-farm soil fertility and structure is protected; in controlling siltation, water supply facilities are protected.

¹⁰ MTTI 2010; NEMA 2011. Foreign expenditures on Ugandan goods and services are estimated at 65 percent, with a sales multiplier of 2 and an income-to-sales ratio of 20 percent.

Given the complexity of watershed processes, estimating the value of watershed services provided by forests becomes increasingly difficult, if not impossible, as the size of the watershed in question increases. Ideally, the links between upstream forest management decisions and downstream hydrological impacts are identified and quantified. The subsequent valuation of those impacts then depends on the economic interests of the affected downstream population. A valuation of this sort is easier to undertake within micro-watersheds, where land and water relationships can be better understood and where stakeholders are directly engaged.

Economic valuation of forest ecosystem services although imprecise can provide an appreciation of the type and level of risks associated with different land-use decisions. Impacts may occur over the long term, such as the insidious impact associated with gradual hydrological change and sediment transport. They may occur over a shorter term, such as during a catastrophic landslide. In either case, the valuation exercise provides a means of interpreting the risk of actions that affect the integrity of forest ecosystem services.

Various authors have tried to estimate the soil erosion protection service offered by Uganda's forests. Emerton and Muramira (1999) applied a district-specific, per hectare cost of on-farm soil and water conservation measures to the area of central forest reserves (CFRs) in each district. District values were then aggregated to obtain a national value for soil and water conservation. Bush and others (2004) used survey data gathered from four villages in four different forest types to determine an average annual value of water supply services provided by forest ecosystems to village households. The value was then applied to the total number of rural households in Uganda to derive an estimate of forest water services.

The valuations in both of these studies are most relevant at their disaggregated scale: at the district or at the village level, for local land-use decisions. Up-scaling to the national level becomes problematic because it implies that the same forest ecosystem linkages and population dependency exist throughout the country. But the valuations provide an indication of what might be at risk if all assumptions and existing economic parameters were to be similar.

The estimate of the water supply ecosystem service of forests calculated for the Country Environmental Analysis (CEA) draws on the work of Bush and others (2004), but limits up-scaling to only forest areas where people are known to live. This approach is similar to that used in the Mabira economic valuation (box 2.1), wherein forest ecosystem services were assumed to impact only the adjacent populations.

In Bush and others (2004), 60 percent of surveyed respondents indicated that their principal source of water came from sources within or emanating from local forests. The value of this water-provisioning service is calculated using the cost of an alternative water source. Sinking a borehole for groundwater supply is a common way for rural people to get water; hence the replacement cost of the forest-ecosystem water-provisioning service is based on the cost of installing a borehole, maintaining it, and depreciating it over 5 years. In 2010 terms, the average annual cost per household in the study areas is \$13.57 (US\$27,483). There are about 2.7 million people living in parishes adjacent to forest

reserves (APRM 2007), which would be about 574,468 households.¹¹ For these households, the water service of adjacent forests may be worth about \$7.8 mil/yr (US\$15.7 bil/yr).

Box 2.1 Economic Valuation of Forest Goods and Services in the Mabira Central Forest Reserve (CFR)

In 2007 the Government of Uganda proposed to degazette part of the Mabira CFR for sugarcane production. The proposal was politically contentious, but community and conservation groups challenged the proponents of agro-industry. To inform the debate, a Total Economic Value (TEV) framework was applied to assess and compare the implications of the two competing land-use options. The biophysical attributes of the Mabira CFR and its area of impact were reviewed. The value of forest products and ecosystem services to the local population was assessed and compared to the economics of sugarcane production. The evaluation found that maintaining Mabira CFR under its current land use was a better land-use option than sugarcane production.

The TEV framework applied to this well-defined local situation facilitated an informed decision-making process. It also brought to light important issues of compensation and subsidization. In the absence of the TEV framework, stakeholders were unaware of what they were losing and their entitlement to compensation for that loss, and the government was unaware of the implicit subsidies that it was offering to agro-industry.

Source: Moyini 2008.

Ecosystem Service: Flood Protection

Forests cannot stop catastrophic large-scale floods, but they can slow the event and reduce downstream damage. At local levels upland forests can delay and reduce peak floodwater flows. They reduce the downstream damage of flooding because they prevent the sliding of land and debris. Research has shown that tree roots impart substantial strength to soils. In a large storm event, forests hold onto the soil and rocks and reduce the severity of the flood damage.

In March 2010 landslides buried three villages in the Bududa district in eastern Uganda, when mud and rock slid down the deforested slopes of Mt. Elgin. Some 300,000 people were temporarily displaced, 50,000 were affected for a long period, and (varying reports indicate that) 100–300 people were killed. Infrastructure was damaged, and homes, food crops, and livestock were lost. The Ugandan and International Red Cross societies assessed the need of responding to the disaster and supporting the displaced persons for 3 months at \$1.2 million.

Since the disaster, reforestation of the area has started. In November 2010 a three-year project supported by the United Nations Development Programme (UNDP) and the United Kingdom¹² was launched to increase forest cover on Mt. Elgin's slopes. The \$1 million project was to be implemented in the districts of Bududa, Manafwa, and Mbale.

2.5 Wetland Resources Income at Risk

Over 70 percent of all wetlands in Uganda are used for water collection, livestock grazing, and tree harvesting. Other top uses include beekeeping, fishing, hunting, and cultivation for food and fiber (WMD and others 2009). The non-consumptive and non-remunerative wetland services include water purification and waste treatment, groundwater recharge

¹¹ The average household size in Uganda is 4.7 persons (NDP 2010).

¹² Territorial Approach to Climate Change (TACC) Project is a partnership of four United Nations agencies with subnational territories and their associations.

and discharge retention, sediment retention, flood control and storm protection, and climate modulation, among other regulating and supporting ecosystem services.

The contribution of wetlands to national income is represented in the national accounts only to the extent that some wetland goods are traded in formal markets, but most are not, nor are the ecosystem services that they provide. Stakeholders acknowledge that wetlands contribute greatly to the income and livelihood of most Ugandans, and consequently wetlands are recognized in the National Development Plan (NDP) as an enabling sector to the economy (NDP 2010).

Various economic valuations of wetlands goods and ecosystem services have been undertaken. The most often quoted work is that by Emerton and others (1998) on the Nakivubo wetland in Kampala, and Emerton and Muramira (1999) on papyrus, rice, and livestock grazing. WMD (2009) recently built upon the valuation work by Karanja and others (2001).

For the CEA, fieldwork was undertaken in four different districts (Bushenyi, Kabale, Kasese, and Kumi) to investigate wetland management approaches, and to collect information for an up-to-date valuation of wetland uses. Four products were found to be important to the areas visited: household and livestock water, livestock forage, and papyrus production.

Fresh Water Storage and Supply to Communities

It is estimated that a quarter of Ugandans depend on wetlands for their domestic water supply. Wetlands store water, purify it, and then release it, which maintains the flow of streams, rivers, boreholes, and springs.

During the field survey in January and February 2011, the importance of wetlands for water storage was clear because two out of the four towns that host district headquarters (Kasese and Kumi) were experiencing acute water shortages, which the inhabitants attributed to the impacts of wetland degradation. In both towns, the average price of water had increased more than 10-fold, going from USh5/liter to USh75/liter.

For the four districts, the water supply value of local wetlands to the 80 percent of households reliant on them for domestic water is estimated at \$14 million. For the nation as a whole, the dependency on wetland water is a smaller percentage. Allowing for the percentage of urban and rural population with access to “safe” water provided by water authorities and those who access water from adjacent forest lands, some 8.3 million Ugandans are accessing water elsewhere, most likely from wetlands.¹³ With average water consumption at 10 liter/day, and USh5,000/cubic meter (m³) the value of wetland domestic water supply is \$65.9 mil/yr for 30.3 million m³ of water.

Wetland Use for Livestock Watering

Use of wetlands for livestock watering is of very high importance to local communities, as was observed during the case study field visits. Livestock farmers will relocate their cattle herds to other districts in search of water and pasture sites. Local technical officers expressed their frustration in conveying the value of wetlands for livestock to policy

¹³ This number is consistent with an often-quoted estimate done before 2004, which found 5 million people dependent on wetland water.

makers and planners, especially in the light of government policy to promote conservation and water management for production in the livestock industry.

Based on field interviews and survey work supported by district data, the economic value of wetlands for provision of water for livestock was estimated to be about \$2 mil/yr for the four districts all together. On a national level, assuming that 10 percent of the nation's cattle herd relies on wetland water, the total value of wetland water to livestock is \$36.2 mil/yr for 16.7 million m³ of water.

Livestock Forage from Wetland Areas

Wetlands provide a reliable resource for livestock grazing in most parts of Uganda. This is particularly the case in the dry season, when most vegetation dries except that found in moist wetland areas. The wetlands will continue to be an important resource for the livestock industry, especially as a means to adapt to climate variability and change.

Field visits found that exotic cattle breeds are mainly kept in paddocked and fenced farms. Indigenous breeds are mainly free-range grazers on communal and private lands. In two of the districts surveyed, free range grazing was mostly on communal land. Wetland areas are in fact used for grazing a number of livestock types (cattle, goats, sheep, and pigs). But valuation work is focused on use of wetlands for cattle alone.

Based on field observations and statistics from the 2009 livestock census, the total economic value of wetlands to the four districts is estimated at nearly \$5 mil/yr. Assuming that at least 10 percent of the nation's cattle herd relies on wetland forage, the wetland forage input value to the national cattle herd could be in the neighborhood of \$90.5 mil/yr. This unpriced input supports a livestock sector that is worth at least \$290 million to the national economy (UBOS 2010).

The Value of Papyrus Raw Materials in Four Districts

An important and dominant plant species in Uganda is papyrus (*Cyperus papyrus*). Papyrus reeds have multiple benefits: as craft materials (mats, chairs, baskets, trays), for roofing/thatching, and to make ropes for construction.

A study of Pallisa District estimated the value of papyrus (Karanja and others 2001). Productivity data gathered at that time were applied to the local unit prices and papyrus areas in the Bushenyi, Kabale, Kasese, and Kumi districts. For these four districts together, raw papyrus (before value added) was worth about \$1.1 mil/yr and \$83/ha.

WMD (2009) calculated the potential annual sustainable harvest of papyrus from detailed nationwide maps of papyrus wetlands, to derive a potential *national value* for raw papyrus. Using the productivity and price data from the Pallisa District study, the potential value of raw papyrus to Uganda is estimated at \$38.3 mil/yr (US\$88 billion).

Water Purification and Waste Water Treatment

The combination of substrate, plants, litter, and a variety of microorganisms enable wetlands to treat human waste, essentially functioning like a natural wastewater treatment facility. In rural areas, wetlands provide a public service in filtering human pollutants out of open sources of drinking water such as streams, rivers, lakes, and shallow wells. Unfiltered contaminated water increases the risk of water-related diseases, a problem in rural areas.

In urban areas, urban wetlands provide the same service, albeit in a more demarcated setting. The purification service of the 3.5 square kilometers (km²) of Nakivubo wetland in Kampala is currently estimated at \$1.3 mil/yr (WMD 2010). On a per hectare basis, the wetlands' wastewater function is worth \$3,829/ha.

Rice Production

Some 70,000 hectares of wetlands have been converted for rice production, mostly in the southwestern and eastern districts. The value of the current level of rice production attributable to wetlands is estimated based on a farm gate price of 620 US\$/kilogram (kg),¹⁴ and an average yield in lowland rice cultivation of 1.7 tonnes/ha. The result is a total of \$37.9 mil/yr (US\$76.7 bil/yr). The per hectare wetland rice value is thus about \$540. Although rice production in wetlands contributes immensely to livelihoods of local populations, its negative impacts outweigh these benefits.

The Government of Uganda acknowledges the ecological challenges associated with wetland rice production (MAAIF 2009), namely the negative impacts on wetland benefits of water provision, wetland products, and flood protection among others. As a result, bans on agricultural production have been instituted in some wetlands, although it is permitted in others.

To lessen the negative impacts on wetlands of agricultural production, particularly with respect to rice growing, the Wetlands Sector Strategic Plan is to work with the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) to harmonize policies and minimize the impact on the country's overall stock of wetland resources.

2.6 Fisheries Income at Risk

Fisheries production data show that:

- Sixty percent of fisheries production comes from Lake Victoria fisheries, and the remainder from the other Ugandan lakes.
- Only 5–10 percent of fisheries production is exported, and most of it is from Lake Victoria.

The national accounts show that in FY2009–10, fish catch that passed through formal markets was worth \$430 million (US\$870 billion), representing about 367,000 tonnes of fish destined for both domestic and export markets.

Given the small size of the export market relative to the domestic, the export price of fish would have little effect on internal fish prices. If that is the case, then the shares of Lake Victoria and non-Lake Victoria fisheries value in the national accounts would reflect their production shares: 60/40. Thus calculated, the non-Lake Victoria fish catch is worth about \$172 million, and the Lake Victoria catch about \$258 million.

Data on informal market household fish consumption were unavailable, but survey work in 2006 estimated the unreported illegal export trade to be about 8 tonnes, which represented 2.3 percent of reported production in that year. Assuming that the same level

¹⁴ The wholesale price of rice delivered to Mbarara is US\$2000/kg. It is adjusted downward to account for transportation and other intermediate costs to arrive at a farm gate price.

of illegal exports is still occurring, 2009 production levels may actually be closer to 375,000 tonnes, for a fisheries value of \$440 million, with the illegal production assumed to be split between the Lake Victoria and non-Lake Victoria fisheries in accordance with their production shares.

2.7 Summary of Indicative Current Income from Natural Resources

Table 2.1 provides a summary of the above valuations. Except where otherwise indicated, these are yearly income (flow) values of natural resource goods and services. They represent the estimated annual return that the natural resource base provides in its current condition. With the exception of the rice production value, these are the values that are at risk to the various drivers of degradation. They are also the annual values that could be increased, if those drivers of degradation were restrained. With respect to rice production, it is included in the table for completeness. It must be stressed that these are indicative values—they provide an order of magnitude estimate of the potential values at risk. The valuation of ecosystem services is fraught with complexity, and the valuation of such services are better done at the local scale where linkages can be better understood for the management decisions at hand. The water quality and supply services of forests are particularly difficult to capture on a large scale, but an attempt has been made to bring to light the potential value. All of the valuations in table 2.1 are considered to be conservative, minimum values.

2.8 Costs of Land Degradation

In the last 30 years, real growth in crop output was achieved mainly by the expansion of land and a growing labor force. A recent study estimates that the change in total factor productivity between 1991 and 2006 was negative, reflecting a decline in agricultural output per unit of input. The causes are many: unsustainable farming practices resulting in soil degradation, reliance on rainfall without means to adapt to monthly and seasonal variability, land tenure insecurity, and poor market access.

The yields of major food crops are low and some have fallen over the past decade. Average yields for most are less than 1 tonne/ha; maize, for example, is at about 500 kg/ha; beans, at 300 kg/ha. Export crops are not spared: yields per hectare for both cotton and coffee declined between 1999 and 2006 by 53 percent and 70 percent, respectively.¹⁵

Nutrient Losses

Average soil erosion is estimated to exceed 5 tonnes/ha/yr, and the associated soil nutrient loss is particularly pronounced because most of the nutrients in tropical agriculture are in the top 5 to 10 centimeters (cm) of the soil. In the erosion hotspots (chapter 1, figure 1.2), it is estimated that nitrogen, potassium, and phosphorus balances have been declining 85, 75, and 10 kg/ha/yr respectively. Farmers generally do not replenish the soil: an International Food Policy Research Institute (IFPRI) study calculated that 95 percent of farmers take more nutrients out of the soil than were being returned.

¹⁵ MAAIF (2010a). Yield data from MAAIF differs considerably from that implied by the UBOS production and area data. UBOS' estimate of maize yield would be twice that of MAAIF's monitoring unit for the Agriculture Sector Support Program, the 500 kg/ha quoted here.

Various authors have tried to estimate the cost of nutrient loss. Slade and Weitz (1991) figured it to be 4–12 percent of Uganda’s total GDP in 1991 whereas Drechsel and others (2001) estimated the costs of land degradation to be 6–11 percent of agricultural GDP. Yaron and Moyini (2004) found it to be 27 percent of agricultural (2001–02) GDP.¹⁶ All of these valuations were based on nutrient replacement costs. Applying those of Drechsel and others (2001) and Yaron and Moyini (2004) to current (2009–10) agricultural GDP (excluding forestry and fishing), results in nutrient losses range from \$183 to \$816 mil/yr.¹⁷

A study focusing on the Lake Victoria Basin (LVB) for the Lake Victoria Environmental Management Project II estimated that soil erosion in the LVB alone represented a cost of \$10 million (box 2.2).

Box 2.2 Lake Victoria Basin

Land degradation is the main cause of increased sediment loads into the Lake Victoria Basin (LVB). High population growth, coupled with poverty and unsustainable agricultural practices have increased pressure on land. Some small-scale farmers have resorted to cultivating in areas with steep slopes, riverbanks, forests, and wetlands, contributing to increased soil erosion, decreased nutrient retention in soils and wetlands, and thus increased mineral and biogenic sedimentation in Lake Victoria. Overgrazing has also contributed significantly to soil erosion. The highest erosion risks are fields cultivated with annual crops, and rangelands on bare hills. The average annual soil loss is highest on annual crops (85 tonnes/ha), followed by degraded rangelands (45 tonnes/ha), banana crops (28 tonnes/ha), and coffee crops (27 tonnes/ha). The estimated economic value of the soil lost due to soil erosion in the LVB is approximately \$10 mil/yr.

Source: World Bank 2009c.

Water Productivity Losses

Another way to estimate the cost of soil erosion is to consider foregone crop yields as a result of land practices that reduce the productivity of inputs. The yield gap is the difference between the average actual yield and the average yield in farm demonstrations where “best practices” are employed. Based on field tests in six Sub-Saharan African countries, there is on average a cereal yield gap of 2.4 tonnes/ha in the region. For example, when the study was done, Uganda was shown to be realizing about 43 percent of its maize potential, producing 1.8 tonnes/ha although it was capable of 4.2 tonnes/ha.¹⁸ This estimate is still far below what has been achieved at Ugandan research stations, where maize yields are in the order of 5–8 tonnes/ha.¹⁹

¹⁶ Valuation estimates are based on soil loss survey work done by Nkonya and Kaizzi (2003).

¹⁷ Yaron and Moyini (2004). The estimate was originally reported as 11 percent of total GDP, which at the time would have been 27 percent of agricultural GDP.

¹⁸ World Bank (2007a). Note that 1.8 tonnes/ha is well above *current* average yield data for Uganda.

¹⁹ External Monitoring Unit (EMU) of the Agriculture Sector Support Program.

Table 2.1 Indicative Incomes from Ugandan Natural Resources

Natural resource	\$ mil/yr	Source/data for calculation
Agricultural land		
Food crops	2,500	UBOS 2010
Cash crops	240	UBOS 2010
Livestock	280	UBOS 2010
Forests		
Sawn timber and poles	140	NFA 2007; UBOS 2010.
Fuel wood and charcoal	460	NFA 2007; UBOS 2010.
Nontimber forest products—excludes fuel wood	63	Updated Bush and others (2004) with data from Biomass Study (2005).
Tourism—value added of national parks	78.4	UWA receipts and parameters from Moyini and Uwimbabazi (1999).
Water supply—only households near forests	7.8	Based on Bush and others (2004) and population data from APRM (2007).
Wetlands		
Water supply—domestic use	65.9	Based on case studies in four districts.
Water supply—livestock	36.2	Based on case studies in four districts and livestock census data.
Livestock forage	90.5	
Papyrus—raw material in four districts	1.1	Based on Karanja and others (2001) and data (area and price) from four districts.
Papyrus—raw material potential nationwide	38.3	WMD and WRI (2009) and Karanja and others (2001).
Wastewater treatment—3.5 km ² of Nakivubo wetland in Kampala	1.3	Updated Emerton and others (1999). Implies \$3,829/ha value.
Rice production—70,000 hectares nationwide	37.9	Based on MAAIF (2009); Uganda production and price data.
Fisheries		
Lake Victoria fisheries	264	UBOS 2010; MAAIF 2010a.
Non-Lake Victoria fisheries	176	

Source: Author's calculations.

Note: MAAIF = Ministry of Agriculture, Animal Industry and Fisheries; NEMA = National Environmental Management Authority; NFA = National Forestry Authority; UBOS = Uganda Bureau of Statistics; UWA = Uganda Wildlife Authority; WMD = Wetlands Management Department; WRI = World Resources Institute.

Land degradation in the form of soil erosion is the main cause of poor crop yields. Soil erosion reduces yields by removing nutrients and organic matter and also changes both the availability and the productivity of water for plant growth. The loss of soil depth and organic matter diminishes the soil's water storage capacity and reduces its permeability. Compaction seals the surface thereby reducing water infiltration, and increasing surface runoff and evaporation. In Uganda, erosion is widespread. In some regions 60–90 percent of land area is affected by soil erosion. Soil compaction is a known problem in many areas, especially in the Cattle Corridor.

Rainfed agriculture generates most of Uganda's agricultural production, and will continue to do so for the foreseeable future; it is the main source of livelihood for 85 percent of farmers.²⁰ Hence, water management needs to be the focus and goal of land management if agricultural output is to increase. Apart from areas that are subject to absolute water stress—the dry semiarid and arid zones of the Cattle Corridor—research shows that observed differences between farmers' yields and attainable yields cannot be explained by differences in rainfall. They are, rather, the result of differences in water, soil, and crop management (Rockström and others 2007). Managing rainfall *variability* is the biggest challenge in regions where the overall crop water requirement is met by rainfall, but where rainfall variability produces short periods of dry spells during critical growing stages.

Largely due to population growth, Uganda is expected to become increasingly water stressed. Hence, the urgent need to increase the productivity of available water supplies—both the *blue* water (that is held in storage, lakes, rivers, dams, groundwater) and the *green* water (rainfall available for plant uptake). Water productivity refers to the amount of water needed to generate a unit of produce—in other words, *more crop per drop*. Increasing water productivity means getting more output per unit of water input. This effectively frees up water supply for use elsewhere, while enabling an increase in agricultural output.

Research indicates a very large potential to double or even quadruple the output of rainfed agriculture through investments in water-use efficiency measures coupled with investments in soil, crop, and farm management (Pathak and others 2009). Water runoff and drainage reduces the productivity of water for agriculture because available water does not reach the plant root base to enable transpiration and plant growth. It has been shown that in poorly managed soil, such as Uganda's, only 15–25 percent of total rainfall is productive to plants because of high runoff and evaporation losses (Rockström, Barron, and Fox 2003). Water productivity is further stymied by the lack of nutrients in degraded soil with which water can interact.

A review of 286 World Bank projects showed the possible range of water productivity improvement from resource-conserving agricultural techniques that enhance soil fertility and reduce water evaporation and runoff. In the survey, water productivity gains ranged from 70 to 100 percent in rainfed systems, and from 15 to 30 percent in irrigated systems

²⁰ Currently there are 14,000–20,000 hectares of formal irrigated lands and 42,000–67,000 hectares of informal irrigated lands, the latter primarily on managed wetlands. Uganda's potential irrigated area ranges between 170,000 and 560,000 hectares (Irrigation Master Plan, August 2010), representing only 4–13 percent of the total arable land of 4,400,000 hectares. Hence, the irrigated sector is and will remain small relative to the rainfed sector.

(Pretty and others 2006). Using the water productivity estimates of that study, table 2.2 shows the potential increase in production for a selection of rainfed food crops in Uganda. Potential productivity improvements for three types of crops—cereals, root crops, pulses/legumes—were applied to actual output quantities of these crops in 2009. A weighed average price for each crop group was calculated using wholesale prices at Mbarara for crops within each group. The total increased value of crops delivered to Mbarara was then adjusted downward to account for transportation and other intermediate costs to arrive at a net value of increased agricultural production. The increase was calculated to be \$2.5 billion, which essentially equaled the current value of food crops in Uganda’s GDP. It was also three times the upper end of the cost of nutrient loss estimated by Yaron and Moyini (2004), though this is a conservative estimate given that cash crops were not included in the calculation.

Table 2.2 Increased Agriculture Production from Water Productivity Improvement

Crop group	Production 2009 '000 tonnes	Price (at Mbarara) USh/kg*	Percent increase in water productivity	Incremental production value Billion USh (\$)
Cereals	2,811	1,217	70.2	2,402
Root crops	8,634	1,186	107.5	11,010
Pulses/legumes	1,241	2,280	102.3	2,895
Total value of increased output delivered to Mbarara				USh16,307 (\$8.05)
Value of increased agriculture production (31 percent of delivered price)				USh5,055 (\$2.50)

Source: Author’s calculations.

Note: * weighted average price. Kg = kilogram.

Increasing the productivity of water and capturing the potential gains described above will require investments in on- and off-farm soil and water conservation techniques that reduce water-shortage risks posed by rainfall variability. Water-use efficiency needs to be increased, which means both increasing the amount of captured rainfall, and increasing the amount that actually reaches the plants’ roots. Complementary investments include improved cropping systems and access to inputs and markets.

Siltation of Water Supply Infrastructure

Uganda has invested considerably in the provision of water supply infrastructure (boreholes, valley tanks, earth dams) to small towns and rural areas to provide water for domestic consumption and production. The functionality of this infrastructure has proved difficult to maintain. An optimistic estimate of the functionality of the current installed capacity is 62 percent. Of the capacity that is dysfunctional, 50 percent is due to siltation. District reports indicate that in many cases siltation is due to land degradation in the immediate zone of the infrastructure.

Drawing from the Ministry of Water and Environment’s (MWE’s) Water Strategic Sector Investment Plan, over the next 5 years, the average yearly investment in new and

replacement infrastructure to meet water supply targets is estimated to be \$115 million (US\$223 billion). Functionality of this infrastructure is not expected to improve in the near future. If the new and replaced infrastructure remains at risk to siltation and the same percentage of lost capacity, then the average annual cost of siltation, in terms of nonfunctioning installed capacity, could be around \$22 million (US\$44 billion).

2.9 Cost of Unsustainable Forestry to Carbon Storage Value

Carbon storage (sequestration) is an ecosystem service provided to the global community. A country's ability to capture the value of that ecosystem service depends on the application of international mechanisms available to do so such as a Reducing Emissions from Deforestation and Forest Degradation (Plus) (REDD+) Strategy. Uganda has undertaken to formulate a national REDD+ Strategy (see section 7.9).

Carbon dioxide (CO₂) sequestered in Uganda's standing forests was calculated using FAO (2010) estimates of Uganda's carbon stocks. For 2010 the weight of dry carbon in living biomass is estimated at 108.7 million tonnes. To convert carbon in biomass to CO₂, carbon tonnage is multiplied by the ratio of the molecular weight of CO₂ to the atomic weight of carbon: 44/12. Thus, the weight of CO₂ sequestered in Uganda's forests in 2010 is about 399 million tonnes.

Prices for CO₂ in international markets vary from highs of \$10.9/tCO₂e (CarbonFix) to \$8.90/tCO₂e (Plan Vivo). Research indicates that often only one-third of the carbon value is actually captured for forest projects in developing countries. A conservative price of \$3/tCO₂e was therefore used to estimate the CO₂ value of Uganda's current forest estate at about \$1.2 billion.

This \$1.2 billion is the value that Uganda could potentially capture from the global community, through the application of REDD+ or similar protocols that prevent unsustainable use of the forest estate. But at present rates of deforestation, Uganda's forest biomass is declining, and with it the carbon storage value of its forests. In 2005 carbon in Uganda's (living) forest biomass was estimated at 124 million tonnes. This implies that the country's forest carbon stores decreased over the 2005–10 period by 15.3 million tonnes, or on average of 3.06 million tonnes/yr. Converting biomass carbon to CO₂ yields an annual change in sequestered CO₂ of 11.22 million tonnes. At (capturable) carbon prices of \$3/tCO₂e, that implies a loss of carbon storage value of \$33.7 mil/yr.

2.10 Costs of Pollution

Water

Lake Victoria is a relatively shallow lake with an average depth of 40 meters. The Lake suffers from pollution from agricultural runoff and untreated effluent that is visible as greenish clouds expanding out into the water. The water quality has degraded and water hyacinth abounds—the latter depletes dissolved oxygen, provides habitat for malaria mosquitoes, and impedes water transportation. Other nonpoint sources of pollution are small-scale workshops and parking lots. Domestic and industrial wastewater is discharged directly into Nakivubo Channel that drains Kampala and its suburbs. This channel then flows into Murchison Bay and is responsible for 75 percent of the nitrogen and 85 percent

of the phosphorus that is discharged daily into the Bay, and is responsible for the eutrophication and algal booms that clog water-treatment plants.

The increasing pollution in Lake Victoria is leading to higher costs of water treatment. The National Water and Sewerage Cooperation (NWSC) currently supplies about 72 million cubic meters (m³) of water annually to residents in large urban centers, the bulk of whom are on or near Lake Victoria. Adjusting for inflation effects over the past 10 years, according to the NWSC (box 2.3), water treatment costs have increased by about US\$54/m³ of water. Given NWSC's volume of water production, the additional cost of treating polluted water is about \$1.7 mil/yr.

Box 2.3 Lake Pollution Blamed for High Water Prices

The increasing water pollution around Lake Victoria has affected the cost of production and increased water prices. The National Water and Sewerage Cooperation (NWSC) deputy director and chief engineer reported: "In the past years, we used to simply filter the water because all the catchment areas were clean. We did not need a lot of chemicals to treat it. But today the quality of water from the lake is very bad and it takes a long process to purify it." He observed that unless the government came out to fight water pollution, the problem was likely to increase. The NWSC notes that 10–15 years back, the cost of treating 1,000 liters used to be US\$100 and below, while today it is about US\$250 and above.

Source: East Africa, April 5, 2011.

Studies on the costs of water pollution control targeting water hyacinth found that during the period 1996–2000, yearly costs ranged between \$100,000–\$500,000. Assuming an average annual cost of \$300,000, and adjusting for inflation would imply that the same level of control costs nearly \$600,000 in 2011.

The cost of health care and associated loss in labor productivity due to mortality and morbidity from water-borne diseases was estimated in 2005–06 (NEMA 2008). Adjusting that estimate for inflation and population growth over 5 years, in 2011 the annual health and productivity costs of water-borne illnesses was approximately \$40–64 million.

Indoor Air Pollution

Biomass fuels meet more than 90 percent of Uganda's energy needs. The rural population, the urban poor, and small industry depends on biomass fuels for basic cooking and heating needs. The fuels are burned in simple and inefficient devices, in inadequately ventilated spaces. Women and children are particularly exposed to the pollutants associated with solid fuel combustion: air-borne particles, carbon monoxide, nitrogen dioxide, formaldehyde, and some carcinogens such as benzene. Exposure to indoor air pollution is linked to acute and chronic respiratory diseases in children and adults, including tuberculosis, pneumonia, and asthma; it is also linked to cardiovascular disease and prenatal health outcomes.

The World Health Organization (2007) assesses the public health importance of indoor air pollution in Uganda and other countries by calculating the Disability-Adjusted Life Years (DALY) associated with indoor smoke inhalation. The DALY combines the years of life lost due to disability with the years of life lost due to death, and is based on the percentage of population using solid fuels. It calculates estimates of morbidity and mortality for three diseases: acute lower respiratory infections among children under 5 years of age, and

chronic obstructive pulmonary disease and lung cancer among adults. For Uganda the DALY was estimated to be 654,000 in 2002.

The cost of Uganda's disease burden related to indoor air pollution is estimated using a human capital (income) approach to obtain a lower-bound economic value.²¹ It uses the World Health Organization (WHO) DALY estimate for Uganda, adjusted for population growth since 2002. It assumes that the incidence of disease in the population (2.5 percent) remained constant over the 8-year period. It further maintains the assumption that 95 percent of the population is using biomass, which could create a slight overestimate of the value because recent reports indicate biomass use has fallen to 92 percent of the population. Applying the average per capita income for 2010 of \$537 to the estimated 2010 DALY of 798,807 yields a cost of indoor pollution of \$429 million (US\$869 billion).

This estimate does not include the public health costs associated with these diseases; it captures only lost economic income. Total expenditures on public health for the country are roughly \$1 billion.²² Some of this would be apportioned to the national cost of treating victims of indoor pollution, which may reduce morbidity and entail an earlier resumption of economic activity.

Chemical: Pesticides

Strengthening the governance of chemicals in *all* sectors is a strategy to mainstream the Sound Management of Chemicals (SMC) in the NDPs. Consistent with the Strategic Approach to International Chemicals Management (SAICM)²³ initiatives, it is a comprehensive, cross-sectoral governance approach to deal with long-term, chemical life cycles, and the related environment and human health issues. Given the results of the Situational Analysis (NEMA 2009c) agriculture is the priority sector. Accordingly, the NEMA conducted a cost-benefit analysis (CBA) for an investment in SMC management in that sector, to calculate net benefits and raise awareness of the costs of inaction on human health and the environment.

The current levels of pesticide use are expected to increase due to the outbreaks of pest populations linked to climate change. Intensified pesticide use by farmers has reduced harvest losses, but the associated costs of human illnesses related to chemical contamination are on the increase. The ban on fish exports in 1994 and 1999 was in fact related to chemical use. In response to chemical risks, organic farming and Integrated Pest Management (IPM) is being promoted.

The CBA calculates four benefits related to an SMC investment for reduced pesticide use. The benefit of improved air quality was estimated using property price differentials. The value of improved water quality was based on a study of the Willingness to Pay (WTP) for reduced pesticide use in Uganda. The reduction in lost work time due to chemical-related

²¹ Stated preference approaches to estimate willingness-to-pay for health typically yield values three to six times greater than the revealed preference (income) approach used here.

²² In 2007 Uganda's health expenditures were 6.3 percent of its GDP (World Bank database); \$1 billion assumes that percentage is the same in 2010.

²³ The SAICM is global initiative adopted in 2006 to ensure that by 2020, chemicals are produced and used in ways that minimize significant adverse impacts on the environment and human health. Uganda is party to a number of protocols for the sustainable management of chemicals, and the SAICM is one of them.

illnesses was based on national health statistics coupled with estimated wage and agricultural output values. Finally, the benefit of improved crop yields was based on current crop yields, and on work by PAN-Africa (2000) on the yield impacts of reduced use of synthetic pesticides.

The costs of the SMC investment are considered negligible in comparison to the calculated benefits of reduced illness, improved water quality, and enhanced agricultural output. Over a 15-year period, with the gradual introduction of a SMC program, and a 4 percent social discount rate, the net present value (NPV) of the SMC investment was estimated to be \$1.97 billion. This value can be translated into a 4 percent annuity yielding an annual flow of \$78 million, which represents the net annual benefit that could be realized by a project reducing pesticide use. Conversely, it is the annual value of foregone pollution reduction benefits, in other words, the costs associated with the status quo level of pesticide pollution.

2.11 Costs of Climate Vulnerability

Climate-related disasters—droughts, floods, landslides, and wind and hail storms—are estimated to destroy 800,000 hectares of crops annually for economic losses of \$75 million (US\$173 billion). Additionally, economic losses resulting from destruction of civil works, transport accidents, epidemic outbreaks, and climate-related conflict are estimated to cost well over \$31 million (US\$72 billion) annually.²⁴ Floods and landslides have been linked to drained wetlands that can no longer absorb water, deforestation that destabilizes soil on mountain slopes, and compacted soil that no longer has any water-retention capacity. The following is a snapshot of indicative costs related to vulnerability to climate change and variability.

Flooding and Landslides

Floods and landslides are among the most devastating natural disasters in Uganda. Floods in 1961–62, 1997–98, 2007, and 2010 caused widespread infrastructure damage, relocated communities to Internally Displaced Persons (IDP) camps, destroyed dwellings and crops, caused livestock to be lost, and resulted in casualties.

The massive flooding in 2007, in the north and east regions of the country, hit 22 districts affecting 6 million people, many of whom had to be relocated to IDP camps. In some areas 90 percent of the protected water sources were contaminated by floodwater and latrines were destroyed. The WHO noted a massive increase in reported cases of malaria and dysentery. In the most affected areas, the majority of people lost 90 percent of their crops. Cattle were lost due to disease, mud, and lack of food. For this event alone, the Government of Uganda launched an appeal for \$41 million for flood response to support affected 50,000 households (300,000 people) needing immediate assistance, resulting in a 10-month hunger gap. The National and International Societies for the Red Cross assessed emergency needs for 20,000 affected households and 125,000 people for 10 months at \$9.5 million.

Local councils in 6 of the 22 affected districts (Amuria, Katakwi, Bukeda, Kaberamaido, Kumi, and Soroti) estimated the cost of the 2007 flood damage including restocking food, relocation of IDP camps, rehabilitation and improvement of infrastructure (schools, roads),

²⁴ MLWE and DDPR (2008) quoted in NEMA (2008); estimates adjusted for inflation to 2011.

disease response, shelter, and safe water to be US\$120 billion. In 2010 this amount would be \$75 million.

Landslides and flooding in early 2010 in the eastern region, particularly Bududa, saw people relocated to IDP camps, and killed nearly 100 people. The National and International Societies for the Red Cross assessed needs for 10,000 affected households (50,000 people) for 3 months at \$1.2 million. The landslides were linked to deforestation on the slopes of Mt. Elgon. It was reported in 2001 that in certain regions of Mt. Elgon, 85 percent of the total area was exposed to soil erosion.

Drought

Climate change will exacerbate water scarcity and pollution problems, particularly in the semi-arid regions. During droughts water tables drop, boreholes go dry, and streams and swamps typically dry up. In the Cattle Corridor districts of Gulu, Apac, Lira, Moroto, Kotido, Soroti, Kumi, Mbarara, and Ntungamo, severe cases of drought were recorded in 1998, 1999, 2000, 2002, and 2005, affecting approximately 655,000 people. The prolonged drought of 1999–2000 caused severe water shortages leading to loss of animals, low production of milk, elevated food prices, and food insecurity. Examples of costs related to drought episodes are, however, not available.

Power Generation

Total installed electric power generation capacity is 416 megawatts (MW). Hydroelectric power accounts for the bulk, with 300 MW from two hydropower units in Jinja on Lake Victoria and another 16 MW from mini hydropower plants. Another 100 MW comes from two thermal electric power units in Kampala.

The country's electric power supply falls short of demand, estimated at 260–350 MW. The hydroelectric facilities operate below capacity at 140–60 MW. Although the two thermal facilities can supply 100 MW, there remains a potential peak demand shortfall of 20–110 MW. For future power needs, the Government of Uganda is planning the construction of two hydroelectric dams at Bujagali and Karuma.

The inability of the hydropower plants on Lake Victoria to operate closer to capacity is linked to declining water levels, which in turn are linked to climate variability. In the case of Lake Victoria, because it constitutes a large majority of its rain basin, it is very sensitive to rainfall. It does not get water from a broad land region via rivers and streams: most of its water comes from rain that falls directly over the huge lake.

Lake levels plunged at the end of 2005 because of drought conditions, combined with high water withdrawals. The costs of a lower Lake Victoria are associated with lost power generation, ships having to dock in deeper water, and lost fish-breeding alcoves. The need for thermal electricity generation is reportedly due to lower lake levels, and the consequent lost hydropower generation capacity. NEMA (2008) reports that this thermal power generation costs the country \$45 mil/yr (US\$92 bil/yr).

2.12 Summary of Indicative Costs of Natural Resource Degradation

Table 2.3 provides the summary of the above estimates of the costs of environment and natural resource degradation, and includes some climate vulnerability examples. Costs

related to soil degradation are the greatest, which would be expected given that the resource base—farmland—represents the country’s largest natural asset, both in terms of value and extent.

Pollution also carries a heavy cost, particularly when the costs to human health and productivity are included. The costs to human health of indoor air pollution are particularly high, which is not surprising given the prevalent use of wood fuel in inefficient devices in poorly ventilated areas. It is an issue that gets little attention; however, the NDP (2010) notes that a strategy for reducing the pressure on forests is to promote energy-efficient cook stoves and alternatives to wood fuel. Such a strategy would be win-win in that it would also contribute to cleaner indoor air.

The cost of water pollution is also notable when human health costs are added: perhaps as high as \$66 mil/yr. It is similar in magnitude to the estimated cost of pesticide use, which is also driven in large part by the health costs of chemical-related illness.

Costs associated with climate vulnerability are based on observed events. Each event is of course different, depending on the extent of the impact and the characteristics of the human settlements and populations involved. The costs shown in table 2.3 are those most widely quoted as annual crop and infrastructure losses due to climatic events. Exactly how they were derived is unknown, but they appear to stem from the damage tally taken after the 2007 massive flooding. In any case, they are indicative of the costs of climate vulnerability.

Table 2.3 Indicative Costs of Natural Resource Degradation

Type of degradation	\$ mil/yr	Source/data for calculation
Soil degradation		
Nutrient loss	245–1,100	Updated Drechsel and others (2001) and Yaron and Moyini (2004).
Water productivity loss — <i>in a selection of food crops</i>	2,500	Based on Pretty and others (2006) and Uganda production and price data.
Water infrastructure cost — <i>due to siltation</i>	22	Based on MWE WSSIP (2009).
Unsustainable forestry		
Decreased carbon storage value	33.7	Based on FAO carbon storage data and author's calculations.
Pollution		
Indoor air	429	Based on WHO DALY for Uganda and 2010 per capita income.
Water — <i>incremental treatment costs</i>	1.7	NWSC volume supplied to large urban centers and increased cost of pollution treatment since 2000.
Water — <i>water hyacinth removal</i>	0.6	Update of estimates over 1996–2000 period (NEMA 2008).
Water — <i>water-borne disease</i>	46–64	Updated from NEMA (2008).
Water and land — <i>pesticide use</i>	78	Based on NEMA (2011).
Climate vulnerability		
Crop and infrastructure loss	75	Floods in 2007. Estimate calculated by affected districts.
Landslides	1.2	Mt. Elgon 2010. Red Cross estimate of emergency aid for 3 months only.
Power generation	45	Cost of thermal power to replace hydropower capacity lost to lower Lake Victoria water level (NEMA 2008).

Source: Author's calculations.

Note: FAO = Food and Agriculture Organization; MWE WSSIP = Ministry of Water and Environment, Water Supply and Sanitation Sector Strategic Investment Plan; NWSC = National Water and Sewerage Cooperation; NEMA = National Environmental Management Authority; WHO DALY = World Health Organization Disability-Adjusted Life Years.

2.13 Selecting a Focus for the Country Environmental Analysis

Input from Discussions

From early discussions about the CEA work, the Government of Uganda expressed interest in a CEA focused on forests and wetlands. The interest stemmed from current degradation issues, including encroachment into wetlands and protected forest areas, forest restoration goals in the NDP, land-use conflicts, and funding requests from the MWE. The Ministry of Planning, Finance and Economic Development (MOFPED) was especially interested in an economic valuation of forest and wetland resources.

Much of MWE's interest in forests and wetlands relates to Integrated Water Resource Management (IWRM). The Ministry is also trying to synergize the efforts of its water and environment subsectors to improve water supplies, but is facing significant management challenges in both forestry and wetlands.

The districts are concerned with wetlands and forests because many of them are experiencing water shortages that they attribute to wetland degradation and deforestation. Also, increased vulnerability to flooding and landslides is blamed on wetland loss and deforestation.

In addition to wetlands and forests, another concern raised by the Bank team members related to inland fisheries. This resource is known to be at risk, but while Lake Victoria fisheries receive a considerable amount of attention, there is little information about non-Lake Victoria fisheries. Hence the alarm was raised that the CEA should treat inland fisheries, if only to assemble baseline data.

The managers of the Trust Fund supporting the CEA, aware of the human and environmental costs of indoor air pollution, were interested in its investigation.

Uganda Priority: Water Supply

The natural resource that affects more people than any other is water, and its availability is vital for Uganda's development. The NDP (2010) treats it as an *enabling sector* to meet national development goals. Ensuring a sufficient water supply is a key development challenge that is intimately linked to environmental degradation, and accordingly environmental management is—like water—an enabling sector in the NDP.

Projected population growth coupled with economic growth will substantially increase water demand for consumptive and non-consumptive uses. At the same time, the availability of water supply is compromised by deforestation, wetland conversion, water body pollution, and unsustainable farming practices. Trends in water availability per capita predict the by 2035 three out of four districts will be under *high to extreme* water stress; and three-quarters of those will be under *extreme* water stress. By 2017 Uganda is predicted to be a "water-stressed country."

Impacts of Ecosystem Degradation on Water

Table 2.4 looks at the impacts of degradation in four ecosystem types: forests, wetlands, farmlands, and water bodies. These four types of ecosystems provide an array of benefits for human well-being. All degradation carries negative impacts, resulting in a reduced supply of several natural resource products and ecosystem services. Notably, degradation in each of the four ecosystems has implications for water supply and water quality.

Climate resilience is similarly negatively affected by degradation in all four ecosystems. Reduced climate resilience means increased vulnerability, particularly to the people living closest to the resources, which is 85 percent of Ugandans. Increased frequency of drought conditions will put greater pressure on existing water supplies. The more water sources are compromised by degraded ecosystems, the more vulnerable will be the people dependent upon them. Similarly, the greater the frequency torrential rains, the more important it is to have wetlands to absorb the excess water, and forests to stabilize the soil.

For MWE, responsible for water, wetlands, and forests, the rationale for focusing on the latter two resources is obvious—they are important for water supply and quality.

Table 2.4 Impacts of Ecosystem Degradation

Benefits provided by the ecosystem	Type of ecosystem degraded			
	Forest	Wetland	Farmland	Water body
Wood products	↓			
Nontimber forest products	↓			
Tourism	↓	↓		↓
Biodiversity	↓	↓	↓	↓
Fish		↓		↓
Wetland products		↓		
Agricultural products			↓	
Erosion control	↓	↓	↓	
Waste treatment		↓		
Water productivity in soil			↓	
Water supply	↓	↓	↓	↓
Water quality	↓	↓	↓	↓
Energy	↓	↓	↓	↓
Flood attenuation and protection	↓	↓		↓
Climate resilience	↓	↓	↓	↓

World Bank Prioritization of Environment Challenges

Prioritization of the focus for a CEA is partially based on the magnitude of the resource values at risk, and Uganda’s development priorities. It is also based on World Bank selection criteria that include the Bank’s comparative advantage in tackling a particular area, its Country Assistance Strategy (CAS), engagement by other development partners (DPs), and the potential for achieving a significant impact.

Table 2.5 presents an attempt to rank the above criteria based on the Bank’s recent operations in Uganda, existing Bank and DP projects (chapter 12, tables 12.2 and 12.3), and the resource valuations and other information provided in this chapter.

Potential degradation costs refer to the value of resources at risk (estimated current income flows), keeping in mind the population that would be affected by further degradation to the respective resources. In terms of the *limited number* of valuations

provided in this chapter, land and forests would rank as economic priorities. But wetlands provide about 8 million people with water, in addition to their importance in water for agricultural production, and wastewater treatment, and a myriad of unvalued ecosystem services from flood attenuation to breeding grounds for the fisheries. Inland fisheries are an important source of protein to the Ugandan population. Indoor air pollution affects 90 percent of the population, and also carries significant costs.

DP and Bank activities in ENR help the ranking process. There are DP projects including a Global Environment Facility (GEF)/World Bank project supporting sustainable land management. There are also many DPs active in the forestry sector. Wetlands and non-Lake Victoria fisheries, on the other hand, have few DP projects. Hence, in these sectors the marginal impact of additional work would be high. It is a similar situation with indoor air pollution.

Focus Sectors Chosen

In the final tally, given the concerns of the country, the need to tackle the natural resource issues that impact water supply, and current activities of the Bank and other DPs in Uganda, the focus areas for this CEA are chosen to be: forestry, wetlands, and fisheries—with a special focus on non-Lake Victoria fisheries.

Table 2.5 A Ranking of Environment Challenges for the CEA Focus

Natural resource sector	Potential degradation costs	World Bank comparative advantage	Already addressed (Bank or DPs)	Potential impact of additional support
Land and soil	+++	+++	+++	+
Forest	+++	++	++	++
Wetlands	++	+	+	+++
Fisheries (non-Lake Victoria)	++	++	+	+++
Water pollution	++	+	+	++
Indoor air pollution	+++	-	-	+++
Climate change	++	++	+++	++

Section II. Environmental Institutions and Governance

The information presented in this section draws on a large number of sources including the various reporting and strategy documents of the Ministry of Water and Environment (MWE) and its agencies, reporting and strategy documents of the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), the 2010 National Development Plan (NDP), various sector work supported by Development Partners (DPs), input from key nongovernmental organizations (NGOs) working in the Environment and Natural Resources (ENR) sector, and field work and interviews undertaken specifically for this Country Environmental Analysis (CEA). The analysis of the functioning of the decentralized ENR institutions draws on local government (LG) case study work covering a number of districts: Hoima, Kasese, Nagasongola (World Bank 2007b), Mukono (World Bank 2008b), Lira, Apac, Bushenyi, Mbale, Wakiso (World Bank 2009b).

Chapter 3 provides an overview of the institutional framework governing the management of natural resources, and various issues relating to its functioning. Focus is placed on the management structures of LG. Chapter 4 looks at obstacles to effective decentralized ENR management and chapter 5 addresses the unavoidable issue of political interference in natural resource management. Chapter 6 turns to current concerns in the nascent oil and gas sector, including the important issue of Environmental Impact Assessment (EIA). Finally, chapter 7 looks at the ways in which the Government of Uganda and Ugandans are responding to the country's ENR management challenges.

Chapter 3. Institutional Framework for ENR Management

Main Messages

- *For the most part, institutional structures are in place to manage the environment and natural resources (ENR).*
- *There is confusion about the respective mandates of the Ministry of Water and Environment (MWE) and National Environmental Management Authority (NEMA).*
- *There are outstanding legislative and regulatory issues: forestry regulations, wetlands legislation, and fisheries legislation.*
- *The Land Use Policy needs to be operationalized; the Land Act needs updating.*

3.1 Overview

The Ministry of Water and Environment (MWE) contains two subsectors: water supply and sanitation (WSS), and environment and natural resources (ENR). MWE also oversees the operations of three semi-autonomous agencies: the National Water and Sewerage Corporation (NWSC), the National Forestry Authority (NFA), and the National Environmental Management Authority (NEMA). NWSC provides water and sewerage services to large urban areas and the NFA manages the country's Central Forest Reserves (CFRs).

NEMA is a regulatory agency. Its functions and activities focus on compliance and enforcement of the existing legal and institutional framework for ENR management. It oversees the implementation of all environment conservation programs of the relevant agencies both at the national and local levels. NEMA differs from the other parastatals in that while NWSC and NFA have performance contracts with MWE, NEMA's contract is only with the Ministry of Finance, Planning and Economic Development (MFPED), and it takes direction directly from the Policy Committee on the Environment (PCE), bypassing the MWE.

The PCE is a subcommittee of the cabinet and is chaired by the Prime Minister and comprises of 10 Ministers. It provides policy guidance and oversight to the ENR subsector, and is tasked with integrating environmental concerns across sectors. The Water Policy Committee (WPC) promotes interministerial and intersectoral coordination for water resource management including the Integrated Water Resource Management (IWRM) at the national level. It advises the Minister of Water and Environment on WSS issues.

The recently created Water and Environment Sector Working Group (WESWG) provides overall policy and technical guidance for the two subsectors, and includes representatives from government, and the donor and nongovernmental organization (NGO) communities. (Prior to July 2008, there were two separate working groups, one for each subsector.)

The Directorate of Water Development (DWD) and Directorate of Water Resources Management (DWRM) are responsible for WSS. The DWD delivers domestic WSS across the country, and water for production (WfP) activities. DWRM takes care of water laws, policies and regulations, IWRM activities, and transboundary water resources management.

The Directorate of Environmental Affairs (DEA) handles ENR issues. Under the DEA, ENR sectors are managed by: the Wetlands Management Department (WMD), the Forest

Support Services Department (FSSD), the Department of Environmental Support Services (DESS), and the Department of Meteorology (DOM).

The Uganda Wildlife Authority (UWA) is responsible for wildlife, wildlife-protected areas, and national parks. It is a semi-autonomous agency of the Ministry of Industry, Trade, Tourism and Industry (MTTI). The UWA is also public-private partnership mandated to work directly with communities affected by protected areas.

The Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) is responsible for agricultural production and fisheries, including the on-farm use and management of WfP: irrigation, animal water supply, and aquaculture. Land policy and planning are in the Ministry of Lands, Housing and Urban Development (MLHUD).

The institutional set-up at the *district level* is different from that of the center. Environment and land issues are under the Department of Natural Resources, whereas water issues are under the Department of Works. Agriculture and fisheries are under the Department of Production.

At the district level there are “officers” responsible for wetlands, forests, and environmental management. There are also forest rangers and forest guards. But as discussed below, in most districts these positions are not all filled and thus officers often fulfill more than one role. At the lower LG structure, such as sub-county or parish, there is hardly any staff to take over environmental tasks. Hence, others, such as health officers or agricultural extension staff, often handle these tasks.

3.2 Overlapping Mandates in ENR Management

Reviews of the institutional structure for ENR management in Uganda show overlaps in the mandates and functions of MWE, DEA, NEMA, NFA, and district LGs (SKAT 2010; MWE 2006). The DEA interim investment plan (MWE 2006) noted that some DEA staff were not sure of their mandates and functions. Reportedly, the confusion stems from the evolution of the ENR legislation: NEMA was created in the National Environment Act (NEA 1995) with roles and responsibilities that were not harmonized with those of the MWE, the latter are defined in the nation’s Constitution. As a result, both the MWE and NEMA seem to be responsible for coordination, monitoring, regulation, and policy formation.

Confusion about roles and responsibilities manifests itself particularly at the LG level and in the municipal councils. Officials and citizens complain that it is not clear to whom they should report or turn in case of a problem or request for support. For example, in cases where NEMA passes an Environmental Impact Assessment (EIA), but with major reservations by LGs, there is no institution to which a dispute can be taken. District Environmental Officers are not clear as to whether they are “*under NEMA*” or “*under MWE*.” Despite the many pieces of legislation, there is no operations manual for ENR that clearly stipulates roles and responsibilities, and clarifies the means for intergovernmental consistency.

NEMA recently published its Strategic Plan 2009–10 to 2013–14, in which it clearly intends to strengthen its presence in LGs. It is not clear how this will mesh with the MWE’s regional Technical Support Units (TSUs, for WSS and wetlands management).

3.3 Local Government Administration and Planning

The Constitution of Uganda (1995) provides for the protection of important natural resources for the common good of all Ugandans. It also strongly supports decentralized service delivery. The Constitution and the Local Governments Act (2000) specify that the system of LG is based on the district as a unit, under which there are lower LGs and administrative unit councils.

Local governments in a district rural area are the “district” and the “sub-county.” LGs in urban areas are the “municipal” or “town” councils. Except for the chairperson of the district council who is appointed by the president, all LG councils are elected and are the highest political authority in their respective area of jurisdiction. LGs have executive and legislative powers to make local laws consistent with the constitution and other laws, make development plans based on locally determined priorities, raise revenue, make and execute budgets, and alter or create new boundaries within their areas of jurisdiction.

Administrative units in rural areas are found in the county, parish, or village. In urban areas they are at the “parish or ward,” and “village” levels. *Administrative unit councils* serve as political units to advise on planning and implementation of services. They are to monitor service delivery, and assist in dispute resolution and the maintenance of law, order, and security.

The responsibility of local planning, budgeting, and implementation is primarily at the levels of district/municipality and sub-county/town council. The number of districts with approved three-year development plans increased from 3 in 1997, to 112 in 2010.

Local planning is to be a bottom-up process. As the planning authority for the district, the district council prepares a comprehensive development plan incorporating the plans of lower-level LGs, for submission to the National Planning Authority. Similarly, those lower level LGs incorporate the plans of village and parish councils in their submission to the district council.

3.4 Governing Principle: Decentralized Management of Natural Resources

A policy of decentralization was adopted by the Government of Uganda in the early 1990s to promote democratization, improve service provision, and ensure good governance. The policy is enshrined in the Constitution and its basic elements and structure are provided in the Local Governments Act. LG priority activities are defined in the Local Government Strategic Investment Plan.

ENR management is decentralized to LGs. When the decentralization policy was instituted, the roles of national sector ministries were shifted from direct service delivery to ensuring compliance with national standards, inspection and training, providing technical advice, mentoring, and monitoring and evaluation. Districts and lower LGs were given the responsibility to manage ENR within their respective areas of jurisdiction. They were required to appoint appropriate staff and establish district and local committees to ensure that awareness is created and ENR management issues are included in local development plans.

LGs provide water services and manage the ENR base. The District Water Office manages WSS development and oversees the operation and maintenance of existing water supplies in the district. LGs in consultation with MWE appoint and manage private operators for urban piped-water schemes that are outside the jurisdiction of the NWSC. The District Environment Office is responsible for ENR, which includes land, wetlands, and the environment. ENR services include vermin control, wetlands management, land administration, and land surveying. The District Forest Service (DFS) manages Local Forest Reserves (LFRs) and provides support to owners of forests on private land. The Production Department handles agricultural and fisheries issues.

The Local Environment Committee (LEC) coordinates natural resource management at lower LGs. LECs include the chief, a community development officer, councilors on production and environment committees, NGO representatives, a representative of extension workers, farmers, and any other person influential in the field of natural resource management. A *local secretary for production and environment*—an elected link person and representative of the community at various council levels—facilitates the LEC. At the parish level, parish production and environment committees coordinate natural resource uses and resolve conflict, participate in planning for human and financial resources, and facilitate community participation.

When ecosystems are split by district boundaries, interdistrict ecosystem management approaches are to be used, as guided by the NEA and LG Act. NEMA is promoting interdistrict natural resources management mainly for riverbanks and lakeshore systems to facilitate management of shared ecosystems through formal agreements that stipulate standardized legal instruments for ENR management and community participation.

3.5 Institutional Frameworks for Natural Resource Sectors

The overarching legislation for environmental management and protection in Uganda is found in the country's Constitution and NEA. The objectives and principles of these important laws are provided below. Other legislation and policies governing the environment and natural resources include the Local Government Act (1997), the Decentralization Policy (1993), and sector-specific legislation and policies. Key environmental regulations include the Environment Impact Assessment Regulations (1998), and the National Environment (Wetlands, River banks and Lake Shores Management) Regulations (2000). The legal, policy, and managerial frameworks of individual natural resource sectors—water, wetlands, fisheries, wildlife, forests, and land—are summarized in this section.

Constitution of the Republic of Uganda (1995)

Environmental protection and management in Uganda starts in the Constitution as a basic human right to a clean and healthy environment. Article 237 (2) b under “Land and Environment” provides that the *Government or Local Government as determined by parliament shall hold in trust for the people and protect natural lakes, rivers, wetlands, ground water, natural streams, forest reserves, game reserves, national parks and any other land reserves for ecological and touristic purposes for the common good of the citizens of Uganda.*

The National Objectives and Directive Principles for environment indicate that:

- The State shall promote sustainable development and public awareness of the need to manage land, air, and water resources in a balanced and sustainable manner for the present and future generations.
- The utilization of the natural resources of Uganda shall be managed in such a way as to meet the development and environmental needs of present and future generations of Ugandans; and, in particular, the State shall take all possible measures to prevent or minimize damage and destruction to land, air, and water resources resulting from pollution or other causes.
- The State shall promote and implement energy policies that will:
 - Ensure that people’s basic needs and those of environmental preservation are met.
 - The State, including LGs, shall (i) create and develop parks, reserves and recreation areas and ensure the conservation of natural resources; and (ii) promote the rational use of natural resources so as to safeguard and protect the biodiversity of Uganda.

The parliament is to provide measures to protect and preserve the environment from abuse, pollution, and degradation; manage the environment for sustainable development; and promote environmental awareness.

National Environment Act (1995)

The NEA provides for the sustainable management of the environment and establishes an authority as a coordinating, monitoring, and supervisory body for that purpose (the National Environmental Management Authority, NEMA). The general principles of the Act are to:

- Assure all people living in the country the fundamental right to an environment adequate for their health and well-being.
- Encourage the maximum participation by the people of Uganda in the development of policies, plans, and processes for the management of the environment.
- Use and conserve the environment and natural resources of Uganda equitably and for the benefit of both present and future generations, taking into account the rate of population growth and the productivity of the available resources.
- Conserve the cultural heritage and use the environment and natural resources of Uganda for the benefit of both present and future generations.
- Maintain stable functioning relations between the living and nonliving parts of the environment, through preserving biological diversity and respecting the principle of optimum sustainable yield in the use of natural resources.
- Reclaim lost ecosystems where possible and reverse the degradation of natural resources.

- Establish adequate environmental protection standards and monitor changes in environmental quality.
- Publish relevant data on environmental quality and resource use.
- Require prior environmental assessments of proposed projects that may significantly affect the environment or use of natural resources.
- Ensure that environmental awareness is treated as an integral part of education at all levels.
- Ensure that the true and total costs of environmental pollution are borne by the polluter.
- Promote international cooperation between Uganda and other states in the field of the environment.

Water

The Water Act (1997) promotes the rational management and use of the waters of Uganda, minimizing harmful environmental impacts. It aims to achieve orderly development and use of water resources for purposes other than domestic use, such as water for livestock, irrigation, agriculture, industrial, commercial and mining purposes, energy, navigation, fishing, and preservation of flora.

The Uganda Water Action Plan (1995) and the National Water Policy (1999) set the overall policy framework for management of water resources. MWE plans and coordinates all sector activities. The DWRM within MWE is the lead agency for water management and development. The Water Policy Committee (WPC) was established under the Water Regulations (1998) to advise the Minister of the MWE on strategic water management and development.²⁵ The WPC promotes IWRM at the national level, coordinates preparation of national water quality standards, and undertakes conflict resolution between national authorities on water resource matters. The Water Sector Strategic Sector Investment Plan (WSS SIP 2009) guides sector development.

In 1999 the Government of Uganda began a series of reforms aimed at making IWRM the foundation for water sector management and development. The sector's SIP was to decentralize IWRM to four Water Management Zones (WMZs) to promote catchment-based WRM. These WMZs covered the entire country: they were the Victoria, Albert, Kyoga, and Upper Nile river basins. At the regional level, Water Sector Development Facilities (WSDFs) would provide technical and financial support to LGs.

WRM activities such as sanitation, development of water supplies, and water for production are implemented at the district level with overall national guidance. The NWSC is responsible for WSS in municipalities and large towns; in small towns and rural growth centers, the DWD is responsible.

²⁵ The WPC is composed of representatives from the Ministry of Water and Environment (MWE), National Environmental Management Authority (NEMA), Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), Ministry of Tourism, Trade and Industry (MTTI), Ministry of Energy and Mineral Development (MEMD), Ministry of Local Government (MOLG), and National Water and Sewerage Cooperation (NWSC).

Wetlands

The National Policy for the Conservation and Management of Wetland Resources (1995) provides the basis for management and use of wetlands in Uganda. It promotes wetland conservation and sustainable use for present and future generations. No legislation specific to wetlands exists, but a National Wetlands Bill is under preparation.

The WMD is responsible for the implementation of Uganda's Wetland Policy. The Wetlands Sector Strategic Plan (WSSP) guides the activities of the WMD. The current WSSP (2011–20) is the second of its kind. Its goals are to increase knowledge and public and stakeholder awareness about wetlands, further develop the institution structure for wetland management, improve management and protection, establish and strengthen community-based wetland management, and mobilize local and international financing mechanisms.

Districts are encouraged to designate a wetlands focal point to carry out wetland activities, and they can seek support from one of the three Regional Technical Support Units (RTSUs) established by WMD to provide technical backstopping to the field for wetland management. Districts are responsible for development of District Wetland Action Plans and their integration into District Development Plans (DDPs). They are also encouraged to formulate and implement district-level ordinances and local bylaws for wetland management. Community-Based Wetland Management Plans (CBWMPs) are prepared by community groups.

Fisheries

The main objective of the National Fisheries Policy (2004) is to ensure increased and sustainable fish production and utilization by properly managing capture fisheries, promoting aquaculture, and reducing postharvest losses. Among the 13 areas covered by the policy, decentralization and community involvement in fisheries management as well as district, sub-county, and community cooperation in fisheries management feature strongly. The policy promotes a flexible system of fisheries management that involves local people in partnership with LGs. It highlights a need to link with the National Agriculture Advisory Services (NAADS), especially when dealing with local farmers and fisherfolk. The outdated Fish Act (1964), which directs the control of fishing, the conservation, purchase, sale, marketing, and processing of fish, has been supplemented by other legislation to match with current changes. A Fisheries Bill (2004) is supposed to replace the Fish Act (1964), but it is still awaiting promulgation. Reportedly it is politically contentious, and possibly inconsistent with the Fisheries Policy (2004).

Wildlife

The Wildlife Policy (1995) and Wildlife Act (2000) provide the policy and legislative frameworks for wildlife management. The management of vermin and non-endangered problem animals is decentralized to the districts, while the management of national parks and core wildlife reserves is the responsibility of the UWA, in the MTTI. Mixed public-private sector entities are responsible for different facets of the conservation and tourism sectors; particularly relevant for wildlife are the UWA, and the Uganda Wildlife Education Centre (previously known as the zoo).

The major objective of transferring wildlife functions to semi-autonomous entities was to enhance their sustainability through generation and retention of revenues from tourism-related activities.

The Act provides for increased participation of communities and the private sector in the management and sustainable use of wildlife resources, including wildlife on community and private land. The Government of Uganda and UWA are obliged to collaborate with district authorities and communities in protected area management. The Wildlife Act stipulates that management plans be developed and followed for all wildlife-protected areas with the full knowledge and participation of all stakeholders, and in particular those that will be directly affected. A plan has to be approved by the UWA Board, but it is assumed that the stakeholders at the district level are consulted. District planning guidelines require the districts to indicate activities to be implemented within the area of jurisdiction by all stakeholders, but revenue and expenses are treated apart from district budgets.

Forestry

The Forestry Policy (2001) and the National Forestry and Tree Planting Act (NFTPA 2003) provide the policy and legal framework for management of forest resources. The Act distinguishes between CFRs, LFRs, community forests, and private forests. The respective responsible bodies for these forests categories are the NFA, LGs through the DFS, communities, and private forest owners.

The FSSD in the MWE is mandated to coordinate the entire forestry sector, to set guidelines and policy, to deal with issues of international nature, and to be the technical arm to the MWE. The mandate of the DFS is to provide extension and technical assistance for LFRs and forests on private land, and to collect local forestry revenue. The main function of the NFA is to manage the CFRs, but is also mandated to provide technical services and products to the forestry sector as a whole.

The decentralized forestry services of LGs are supposed to develop ordinances, integrate forest management into local development plans, reinvest forest revenues in the sector, and establish effective systems of planning, management, and regulation of forestry practices. The LG staff structure includes a district forestry officer for each district, an assistant forestry officer, and, for some, rangers and guards.

At the community level, the NFTPA provides for community participation in forest management. Collaborative Forest Management (CFM) was started in 1998 and so far uptake has been slow: only 30 agreements have been reached with forest-adjacent communities covering about 22,000 hectares—about 3 percent of the total area occupied by natural forests and woodlands.²⁶

Land

A National Land Use Policy is in its final draft (March 30, 2011). It has been under formulation for some time. Its unavailability has been cited as a constraint to the management of forests, wetlands, water, and energy, and an underlying cause of land degradation and conflict in agricultural and pastoral communities.

²⁶ National Forestry Authority (NFA) Annual Report (2006–07).

The Land Act (1998) last amended (2010) provides for the tenure, ownership, and management of land. It decentralizes land management to districts, and provides for the creation of new institutions for land management/administration and dispute resolution. The Land Policy and Land Act are under the purview of the MLHUD.

Land degradation issues—including soil fertility and erosion—are covered jointly by the MAAIF, MLHUD, and MWE.

Chapter 4. Challenges to Decentralized ENR Management

Main Messages

- *The environment and natural resources (ENR) sector is a low priority: it gets less than 1 percent of government public expenditures.*
- *Financial autonomy is eroded by reliance on central conditional funding.*
- *Inadequate capacity handicaps both management and decision-making processes.*
- *Political interference and corruption undermines local (ENR) management.*
- *Weak mainstreaming of environment across sectors.*
- *Weak enforcement and monitoring mechanisms for ENR compliance.*

4.1 Decentralized Governance

The most recent Joint Annual Review of Decentralization (2011) brought together various stakeholders to review the implementation status of the Decentralization Policy. Some of the governance and capacity issues brought to light are summarized below, and echoed throughout the rest of this chapter.

➤ **Governance**

The increasing number of districts is straining local government (LG) capacity and ability to promote local justice. Combating corruption remains a priority. Resources are needed to increase civic education that will foster public participation in government decision making. Intergovernmental coordination and collaboration needs to be improved. The limited flexibility of financial transfers from the central government (mostly through conditional grants) inhibits the autonomy and ability of local governments to respond to area-specific developments and emerging needs.

➤ **Institutional and Financial Capacity**

Adjusting for inflation and population growth, the value of government transfers to LGs has been declining. Most LGs are operating at 50 percent or less of recommended staff capacity; many LGs have at times not been able to pay wages. Inadequate staff reduces the ability of LGs to raise local revenue because even if ordinances and bylaws have been developed, there may be no staff to collect any associated local revenue. The overall poor working conditions make it difficult for LGs to attract and retain qualified people.

4.2 Revenue Sources for MWE Subsectors

Government of Uganda funding to the Department of Environmental Affairs (DEA) has been very limited, even when compared to other departments and divisions within the Ministry of Water and Environment (MWE). Major funding for operations in wetlands and forestry has come from donors.

In fiscal year 2009–10, the total planned budget funding to the MWE was \$118 million (US\$238.4 billion), allocated between its two subsectors as shown in table 4.1. Roughly two-thirds of the *budgeted* amount was for water supply and sanitation (WSS), the remainder, for environment and natural resources (ENR).

Of the \$35 million budgeted for ENR, 83 percent was the contribution from donors. Of the budgeted amount for WSS, 47 percent was to come from donors. In both cases, these are sector-specific donor funds, outside of basket funding arrangements.

Table 4.1 National Expenditures for MWE: WSS and ENR Subsectors

	Fiscal Year 2009–10		
	MWE budget (\$ million)	Actual payments (\$ million)	Actual payments as % of total government spending
Total allocated to the MWE*	118	89	2.6
Allocated to subsector WSS	78	73	2.1
Allocated to subsector ENR	35	16 (~ \$9 million FIEFOC)	0.5

Source: MWE 2010c.

Note: * Includes \$5 million in general support to the Ministry.

FIEFOC = Farm Income Enhancement and Forest Conservation Project; MWE = Ministry of Water and Environment; WSS = water supply and sanitation; ENR = environment and natural resources.

To the ENR subsector, \$21 million was released. Of that amount—most of which was (donor) Farm Income Enhancement and Forest Conservation Project (FIEFOC)²⁷ funding—only \$16 million was actually spent. The seemingly low absorption rate was primarily because of the forestry subsector, wherein released funds were subsequently frozen, pending the outcome of an investigation into the National Forestry Authority (NFA) contracting irregularities. Ignoring forestry, the ENR agencies absorbed 90 percent or more of the released funds.

In the WSS subsector, in the same fiscal year, nearly all of budgeted funds were released and spent. About 64 percent was spent on centrally managed programs, and the remainder went to the districts for WSS activities. In contrast, in the ENR subsector, of the \$16 million spent, less than 2 percent flowed to the districts.

Figure 4.1 shows the allocation of spending within the ENR subsector. Forestry is obviously the biggest benefactor due almost entirely to the FIEFOC funding. The centrally located Department of Environment Services (DES) and the Wetlands Management Department (WMD) are on a slim budget. Wetlands at the district level received funds through the District Conditional Grant for the National Wetland Program. Most of meteorology funding is development spending through the Plan for the Modernization of Agriculture (PMA).

In addition to funding released to MWE by the Ministry of Finance, Planning and Economic Development (MFPED), there were off-budget funds²⁸ to the WSS subsector from the

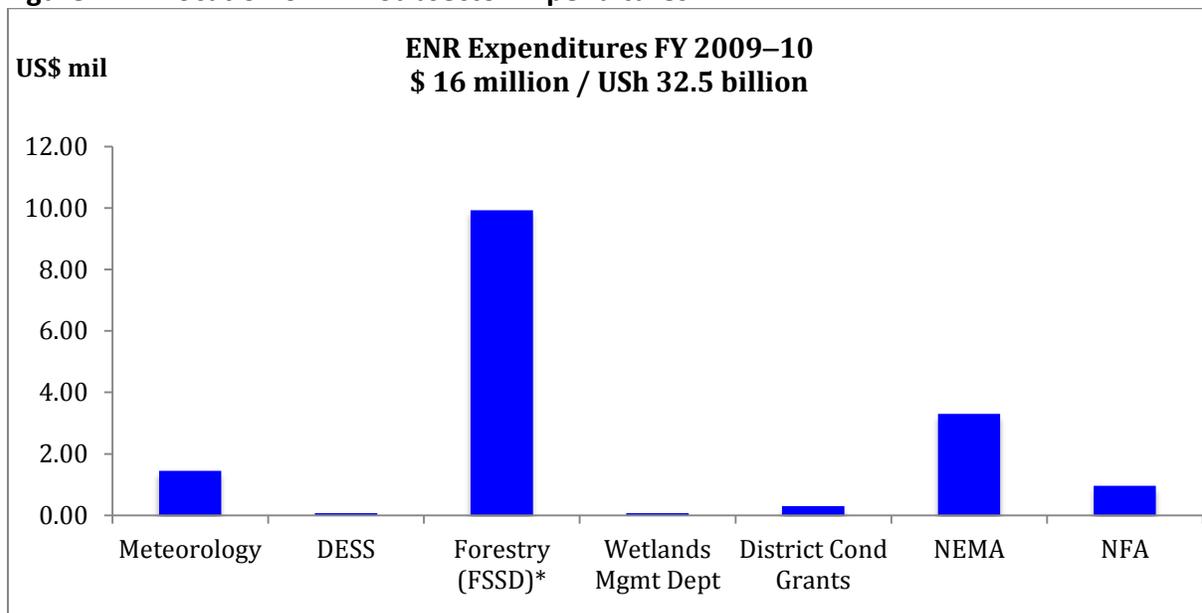
²⁷ Farm Income Enhancement and Forest Conservation Project of the African Development Fund.

²⁸ Off-budget funds are those that are not reported in the Medium Term Expenditure Framework (MTEF) or in the budget estimates of the Government of Uganda.

National Water and Sewerage Cooperation (NWSC) (\$21 million) and nongovernmental organizations (NGOs) (\$9 million). ENR subsector funding was supplemented by revenue from the NFA's operations with \$8.9 million.

In terms of funding for the ENR section, FY 2009–10 was not an exceptional year. In fact ENR funding has declined in each of the past 6 years since FY2004–05, when its budget share was 2.5 percent of total government expenditures. By FY2008–09, it had dropped to 0.56 percent. FY2009–10 was supposed to be an improvement, but even putting aside the NFA frozen funds affair, only \$21 million was ever released, which represents a 0.6 percent share of government expenditures to the ENR sector. By comparison, in FY2009–10, the approved total budget for roads took a 16 percent share; defense, 11 percent; education, 8 percent; health, 5 percent; and community and social services, 2 percent.²⁹

Figure 4.1 Allocation of ENR Subsector Expenditures



Source: MWE 2010c.

Note: * Includes FIEFOC \$9 million.

ENR = environment and natural resources; DESS = Department of Environmental Support Services; FSSD = Forestry Sector Support Department; NEMA = National Environmental Management Authority; NFA = National Forestry Authority.

4.3 Funding for Local Government

Total Funds from the Center to Local Governments

LGs are funded through central government grant transfers, local revenue, and borrowing. Many LGs also access donor funding. The Constitution of Uganda provides for three categories of grants: unconditional, conditional, and equalization; and it gives powers to LGs to collect some tax and nontax revenues. All these sources are operational at different levels of contribution to LG budgets. LGs have powers to collect property tax, but few

²⁹ Funds for mainstreaming environment to other government sectors are planned to benefit the ENR sector, but verification of actual implementation on the ground was not possible due to lack of data.

collect it effectively and it is significant only in urban areas. Various local fees, licenses, and other minor revenues are collected.

With the abolition of the graduated tax in 2005, the ability of local governments to raise revenue was severely reduced. LG funding now largely depends on conditional grants from the center, effectively reducing LG spending autonomy. In most districts, 80–90 percent of the total budget is met with grants from the central government, 80 percent of which are conditional.

Conditional grants are earmarked for specific development and recurrent activities that are subsequently monitored by the line ministries responsible. Conditional grants include funds coming from the District Water and Sanitation Development Conditional Grant (DWSDCG), the PMA, National Agricultural Advisory Services (NAADS), and the Poverty Alleviation Fund (PAF) that provides funds for wetlands. The Local Government Development Programme (LGDP) grant supports the Government of Uganda priorities: education, health, sanitation, and road construction.

Unconditional grants are at the discretion of LGs, but are mostly used for the payment of salaries. Little, if any, is available for service delivery. Local revenues represent the only other source of discretionary funds to LGs. But, as the sum of unconditional grants is often insufficient to cover salaries, local revenues are used to fill the gaps and cover other recurrent operating and administrative costs.

ENR Funds Available for Local Government

In the decentralized system, the responsibility of ENR management is fragmented as a cross-cutting issue under different sectors, complicating coordination and resulting in low funding and no consolidated impact. At the district and sub-county levels of government, natural resource sectors do not compete favorably with the national priority areas—health, education, and civil works. Apart from water (centrally funded under civil works) and wetlands (funds from the PAF conditional grant), management of other natural resources is excluded from most Government of Uganda grants and funded out of local revenues.

Natural resources are sometimes funded through specialized donor projects such as the FIEFOC program, run by the central government, but delegated to LGs. Earmarked funding for wildlife initiatives is funneled to communities adjacent to national parks, but park receipts collected by the Uganda Wildlife Authority (UWA) do not enter the local budgeting process.

Sub-counties likewise depend mainly on central government conditional grants, and allocations to natural resource management vary depending on availability of funds. Allocations have been declining and are expected to continue declining as a result of the withdrawal of the PMA funding.

The margin between budgeted and actually realized funds also differs with different funding sources, and it widens at lower LG levels. Typically, lower LGs can expect to receive 96–97 percent of the budgeted LGDP grant, and all of the budgeted NAADS³⁰ grants. The PMA, on the other hand, which supports environment, agriculture, forestry, and animal

³⁰ National Agricultural Advisory Services (NAADS) spending priorities are determined at the center.

husbandry, typically remits only 60 percent of the budgeted funds, and it often comes in late. Moreover, the ministry responsible for the PMA, the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), is planning to stop funding sub-counties directly and to remit funds only to district levels. There is concern that this will further reduce funding available for local ENR priorities.

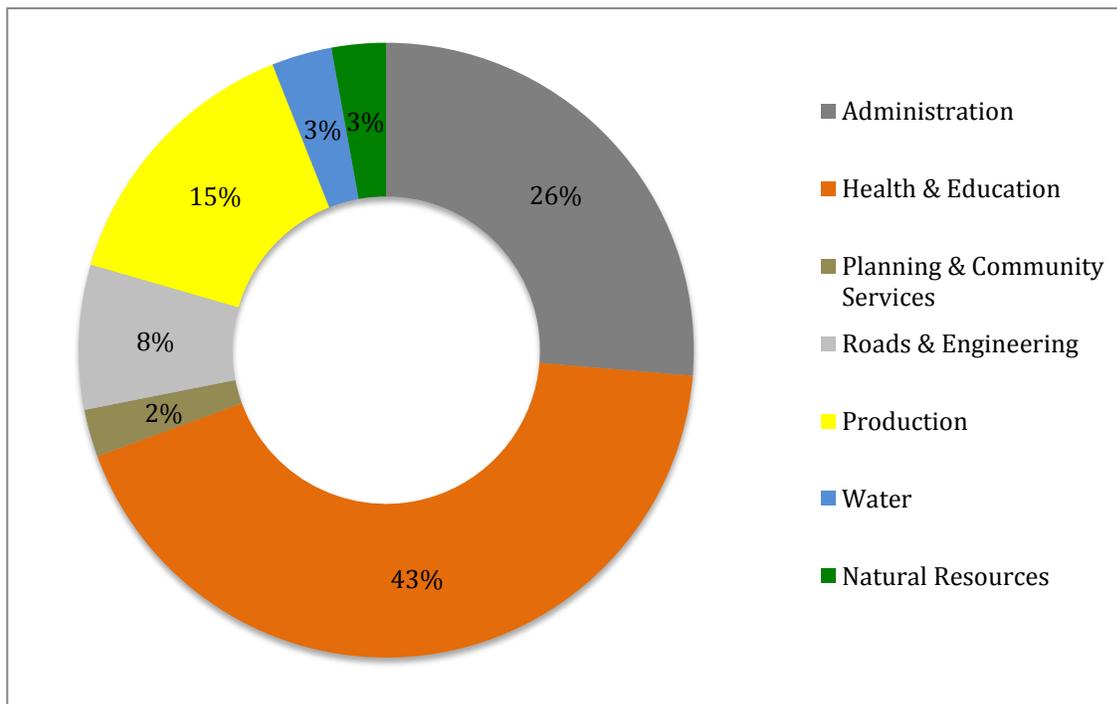
4.4 District Budgets for ENR: Case Study Evidence

Funds Allocated for ENR

The environment is understood as a cross-cutting issue in the districts, and features as such in the District Development Plans (DDPs). But the emphasis on environmental sustainability throughout the DDPs does not necessarily translate into district budget allocations.

The ENR district budget line includes four subsectors: forestry, land, wetlands, and the environment, and a component for office administration. Figure 4.2 shows the allocation of Homia District expenditures for FY2010–11. Natural resources are allocated 3 percent—about \$187,000—of the total approved budget, and *approved* does not mean that all the funds materialize or are necessarily received in a timely manner. *Production* or agricultural extension is also 3 percent, but its funding is more secure because the NAADS budget is protected.

Figure 4.2 Hoima Expenditure Allocations for FY2010–11



Source: Hoima District 2011.

Hoima is not exceptional. Table 4.2 shows the budgetary allocations for the districts of Lira, Nagasonbola, and Mukono. They were surveyed in FY2007–08 and their percentage allocations for ENR were 0.2 percent, 0.3 percent, and 1.4 percent respectively. The bulk of

the ENR budget line is typically allocated to forestry, land management, and administrative office costs, with marginal to zero funds remaining for wetlands and, finally, the environment. For example, in the Hoima budget for FY2010–11, forestry expenditure accounts for 75 percent of the total.

Table 4.2 Categories of District Expenditures

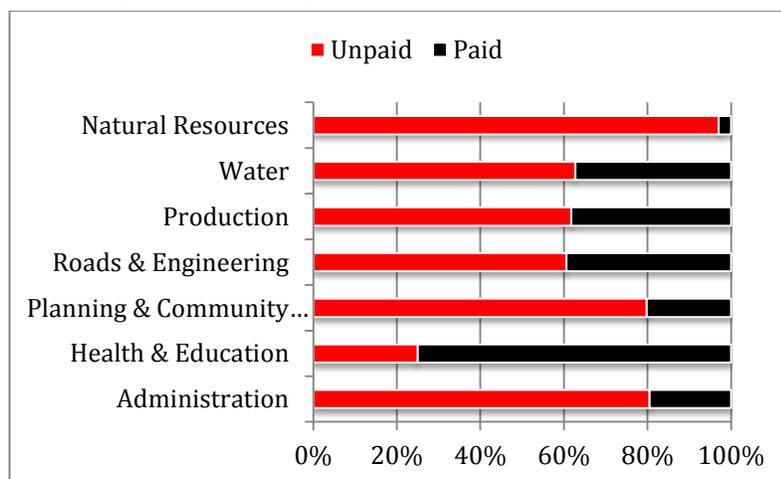
	Mukono %	Nakasongola %	Lira %
Administration	8	8.9	14.5
Council commissions and boards	1.4	4.0	1.0
Finance and planning	11.2	4.1	29.0
Health	14.5	19.6	7.3
Education	46.6	46.2	38.5
Technical services	10.9	10.8	4.7
Production	6.6	4.0	4.3
Natural resources	0.3	1.4	0.2
Community services	0.5	1.0	0.5
Total	100	100	100.0

Source: Budget Framework Papers reported in World Bank (2007b).

Execution Constraints

Budget execution at the district level is characterized by fluctuating and delayed funding that constrains local natural resource departments to undertake planned initiatives. Certain grants that are ring-fenced (PAF, NAADS) are protected from unplanned cuts during the year. Hence, when budget cuts do occur, these budget lines are unchanged while others—particularly natural resources—are cut disproportionately. There is also general uncertainty as to when funds will arrive, and funds for ENR tend to arrive last. For example, Hoima’s receipt of its FY2010–11 budget is shown in figure 4.3. By December 31, 2010, the ENR sector had received only 3 percent of its expected allotment.

Figure 4.3 Hoima Receipts of Funds by December 31, 2010



Source: Hoima District 2011.

4.5 Personnel and Equipment Deficiencies

Human resources are lacking in district administrations primarily because of funding constraints, but also because of restrictive hiring practices, and a limited supply of technically qualified people. The Chief Administrative Officer (CAO) and the deputy CAO are centrally recruited by, and answerable to, the Public Service Commission. District Council members and all the civil service in the district are recruited and fired by the District Service Commission. Local Council chairpersons are elected officials, while the President appoints Resident District Commissioners.

A number of districts, especially the remote and/or underresourced, have difficulty recruiting qualified people. The human resource pool is often further limited because employment and personnel management is politically influenced, and biased toward local candidates. Additional constraints stem from the creation of new districts and the associated increased demand for human resources to staff new institutional structures.

According to the National Development Plan (NDP) 2010, staffing of local governments is on average at 65 percent, which was supported by evidence in the case study districts. Established positions for forestry, fisheries, and environment officers are unfilled at both district and lower LG levels. A recent survey of civil service vacancies found that in only 55 percent of districts was the post of District Natural Resource Officer filled. The position of Community Development Officer is also sometimes vacant. In some cases, community leaders assume the tasks of the unfilled positions. These individuals, although perhaps well intentioned, lack information and training and are hence unaware of the institutional structure of decentralized ENR management and the regulatory and procedural tasks associated with the roles that they undertake.

Natural resource officers in general are overstretched because they are trying to cover the tasks of multiple positions. (box 4.1 provides an example from Hoima District.) They lack equipment, materials, office space, transportation, and fuel. In some cases, officers have resorted to asking the community pay for fuel so they can perform their advisory services,

or asking site owners for transport to the sites that need inspection. These kinds of operational constraints open the door to compromise and corruption.

Staff motivation is low partly because of the lack of systems for staff promotion or recognition. There is also the preoccupation with finding enough money for salaries, and deciding which projects to cut when allocated funds do not materialize.

There is general agreement that the staff that is hired is adequately technically qualified for the posts they hold. But given that they are supposed to be the direct contact with resource users and local leaders, they need a variety of skills—social, economic, and advisory. Reportedly there is a professional Association of District Environment Officers, providing a network for knowledge sharing.

The decentralized system with the weak connection to line agencies has curtailed opportunities for capacity building because supervision, backup, and reporting are fragmented. But, there is also a capacity shortage at the center, constraining the ability of MWE departments to provide oversight and policy guidance to districts.

There are regional Technical Support Units (TSUs) for the water subsector of the MWE, and these are supposed to be expanded to accommodate the water sector strategy, and in particular its initiatives for Integrated Water Resource Management (IWRM) and water for production. Four regional TSUs for wetlands were established as part of the Belgium wetlands project in 2001–03 to provide support to districts. Two of them are still operational, with Regional Wetlands Coordinators in place and two more need to be recruited for the other two TSUs. Inadequate personnel at all local levels threaten data collection and management within the district, and its subsequent remittal to the MWE. Interdistrict and sub-county information sharing occurs mainly in the fisheries sector facilitated by the Department of Fisheries Resources. But this information tends to stay at the community level, and is not systematically collected for district central fisheries managers.

There is also a general need for training in conflict management and valuation of environmental resources. Valuation would help assess the implications of natural resource use decisions, so that decision makers and stakeholders understand risks and make informed decisions about trade-offs. Conflict resolution is necessary to effectively implement those decisions.

Box 4.1 Hoima District Statement of Governance Challenges

Hoima district is rich in biodiversity especially along the Albertine Graben, but our environment department is constrained in ensuring conservation and enforcement, preparing the District State of Environment Report, and continuous creation of awareness of environment and natural resources because of increasing rates of population from the influx of migrants and refugees into the district, leading to alarming rates of forest and wetland degradation.

Many Environmental Impact Assessments (EIAs) have been approved for many developments especially those to do with oil exploration, but again our capacities to ensure monitoring to adherence of the mitigation plans is limited—there is need for more resources to this area. For example, we lack a motor vehicle to use for monitoring and land management.

Land issues are increasingly becoming complex and sensitive, requiring mass sensitization and education on land registration. Planning is another area that has a lot of responsibility in ensuring participatory planning and operational planning and monitoring of the district projects, but it is constrained by inadequate resources to collect, analyze, and disseminate information, and build capacities of the communities to plan. More resources should be availed to ensure its effectiveness.

The major constraint of the district in implementing future plans include: inadequate motor vehicles for almost all the departments that has hindered responsiveness and intervention to service delivery, and limited development partners operating in the district including government programs and projects.

Source: Hoima District 2011.

4.6 Local Government Planning and Budget Process

Overview of the Process

LG Planning Guidelines require a bottom-up participatory process where planning starts at the village and moves up through the parish and sub-county to the district. The process is, however, preceded by briefings with the MFPED, who relays priority issues to district planners and chief finance officers. These officials, in turn, conduct briefings at district and sub-county levels.

The LG Council is the planning authority and is supported by standing committees responsible for the different sectors. The planning process brings together all stakeholders in development. At the national level: the Ministry of Local Government (MOLG), MFPED, line ministries, and other agencies; at the local level: district sector heads, community members, and service providers. The process is to entail performance reviews, capacity needs assessment, situation analysis, priority setting, and preparation of work plans and budgets.

In reality, bottom-up planning includes mainly sensitization meetings and seminars. Planning is facilitated by community development officers at lower local governments, and by the technical officers and planners at the district level.

At the sub-county level, parish plans are reviewed by the technical planning committee then forwarded to the sub-county council for approval. The sub-county incorporates priorities it can handle at its level within its development plan, and forwards others to the district. At the district level, sectors supplement these with priorities identified during fieldwork, and the revised plans are forwarded to the Natural Resources Technical Planning Committee, which examines the plans at district council meetings.

Treatment of ENR as a Cross-cutting Issue

Final resource allocations to ENR sectors at the district level is hampered because for annual activity-planning purposes, environment is considered a cross-cutting issue, while the budgeting process still follows a strictly sector approach. Cross-cutting environmental issues are to be mainstreamed into the objectives and activities of other sectors at the planning stage, yet there is often no matching budget allocation—neither in the environment budget line for the ENR sector, nor in the budget of the sectors into which the environmental activities are supposedly mainstreamed. In response, some districts are calling for a new budgeting approach for the ENR sector. The introduction of a fixed small percentage share from the non-ENR sectors to be earmarked for environmental mainstreaming—similar to the fixed mandatory shares earmarked for monitoring and evaluation. Placing the responsibility for a budget allocation with the other sectors would make them accountable for proactively coordinating with the District Environment Department for implementation of environmental mainstreaming targets. Other suggestions relate to the introduction of an ENR budget line financed out of a National Environment Fund, to ensure reliable ENR budget allocations.

4.7 Challenges for the ENR Sector in LG Planning and Budgeting

➤ Inadequate Human Capacity and Political Leadership

Planning for ENR is emphasized within the decentralized framework, and guidelines to do it were developed by the MOLG and National Environmental Management Authority (NEMA). But it has not been fully integrated in the local government system. Planning and budgeting for natural resources at the local government level relies on: (i) the capacity of technical leaders to articulate issues properly, and (ii) the capacity of political leaders to ensure that budgets reflect natural resource issues. Participatory planning processes play only a secondary role.

Although environment and natural resources are priority areas for local development, they do not receive adequate attention because of insufficient funding from the central government and limited capacity to raise revenues. The result is a serious deficiency in qualified staff at the local level, which leads to inadequate capacity to plan natural resource management; formulate local legislation and ordinances; and implement, monitor, and enforce ENR policy and regulations. Without planning and effective management the resource base continues to be degraded, and local resource revenues remain negligible. Without qualified technical staff to communicate the economic trade-offs associated with natural resource use, local decision makers are unaware of the broader implications of their resource use decisions. Without revenue generation to the benefit of local communities, elected officials do not prioritize natural resource issues. It is a vicious cycle that is perpetuated by inadequate capacity, and abetted by individual agendas.

➤ Political Interference

Without sufficient human capacity for local environmental management, it may be difficult for local elected officials to make informed decisions that support sustainable resource management. But in some cases, with or without information, they are not motivated by the long-term common good, but rather by their own potential short-term gain.

Political interference figures high in the list of challenges for ENR planning and management because it's usually counterproductive effects compound management problems for local environment officials, who are already underfinanced and understaffed. Political interference sabotages the resource management initiatives.

In wetlands, for example, elected officials have sanctioned encroachment, while at the same time environment officials are trying to stop it or are working with the community to find sustainable solutions. Faced with conflicting messages, the community will:

- Disengage from the wetland planning or restoration process *already under way*.
- Abandon the wetland restoration *already under way*.
- Obstruct restoration efforts by those charged with the task.
- Reject further technical advice for sustainable wetland management.
- Increase encroachment into other local intact wetlands.
- Continue using the wetlands as a waste dump.

The local natural resource management planning process is time and resource consuming because of the many stages of the process, the large number of stakeholders involved, and the need to achieve agreement among sub-counties or districts when resources are shared across boundaries. Regulation enforcement is time and resource consuming for environmental officials and others including the police. It is also potentially dangerous when violators threaten violence. Irresponsible behavior that obstructs the planning process or the enforcement of environmental law, squanders scarce ENR resources and increases the costs of both environmental management and environmental degradation.

➤ **Central Priorities Override Local Priorities**

Funding constraints on LG budgets mean that district plans tend to reflect mostly central government priorities: primary education, health, and infrastructure including water. As most of central funding consists of conditional grants for these priorities, there is little money left for the ENR sector—even if local magistrates were to prioritize ENR issues. Furthermore, central government annual assessments check performance of district officers in the delivery of targeted programs. With the exception of water, and some Poverty Action Fund (PAF) expenditures, the ENR sector has no targeted programs and ENR does not figure into the assessment criteria. Playing to the assessment criteria, districts prioritize non-ENR activities.

➤ **Weak Connection to Line Ministries**

Central government priorities might be refocused on district ENR needs if there were more collaboration between district ENR sectors and line ministries. The requirement for all district technical staff to report to the MOLG instead of directly with the concerned line ministries has disrupted the smooth flow of communication between the districts and the line ministry, as well as the provision of technical support to the districts. In the worst cases, local capacity constraints have reduced the quality of data reporting to the center, which further compromises national planning.

The forestry sector is an example of an institutional gap in center/district cohesion. The Forestry Policy emphasizes that the National Forest Plan will provide a strategic framework for the development of the forest sector, but it does not prescribe the specific

role of LGs. Forest management plans, therefore, have been rarely integrated into the District Development Plans. NFA initially had no interaction with districts, but is now working toward setting up a district partnership unit similar to that in NEMA. It has conducted workshops in all districts to initiate dialogue for partnerships to address conflicts, permits, patrols, information sharing, joint planning, and facilitation of some district forestry activities.

4.8 Challenges for Community Participation in Local Planning and Budgeting

Often, the planning process is participatory where community action plans based on local priorities are moved upward through the sub-county and eventually the district council or central government, but funding and implementation of village priorities is rare. Communities often do not have the capacity to articulate and defend their priorities. As a result, lower-level priorities are influenced from above by way of guidelines for priority settings issued from the MFPED that pass down through the levels of government. Thus, the planning process is *seen to be* driven by the bottom, but the agenda is in fact set at the top. In the worst cases, lower levels such as villages and parishes do not participate at all in the planning process due to lack of funds to convene meetings, or the lack of a community development officer.

In management approaches such as Collaborative Forest Management (CFM), planning and negotiation are conducted in a participatory manner. This often requires facilitation through a third party (often an NGO) involving a high investment to create awareness about community rights, build community institutions, conduct community consultation, and develop and negotiate participatory management plans with NFA. From experience in a couple of forest reserves, it can take 2 or more years to finalize a CFM agreement, which is, at the end of the process, often poorly understood by the community because it is written in English legal terminology.

The community's ability to effectively participate in a bottom-up planning process is largely handicapped by the inadequate technical capacity and a lack of political will at the grassroots level. But in cases where there is capacity, there is a chance that community priorities will be considered at the district level. In any case, whether or not they participate in planning and budgeting, they have little power to hold officials accountable for poor decision making or corrupt practices.

At the lowest level, there are community structures to enable ENR management by the users themselves. In the case of water, a community Water User Committee is responsible for demanding, planning, co-financing, operating, and maintaining rural water supply and sanitation facilities. In the case of environment and natural resource issues, community members are encouraged to form user groups such as the Forestry Resource User Group, the Beach Management Units (BMUs) for fisheries, the local Land Committee, and the Environment Committee.

4.9 Challenges for Water Subsector Management

Water Pollution

Although capacity is limited, compliance with regulations for water abstraction, releases and waste discharge is monitored. But compliance enforcement is weak, and often thwarted by political interference.

Catchment-based IWRM is central to the water sector strategy, but capacity will need to be increased and synergized with efforts in the ENR subsector. For example, in Hoima, the three biggest challenges faced by the water department are inadequate funding, understaffing, and destruction of the environment. As noted in their workplan:

Much as the district is struggling to provide safe and clean water to the rural community, this effort is being undermined by the rural population through deforestation, which has led to the drying of a good number of water sources.

Inadequate water data limit analysis at both the district and national levels. It impedes negotiation on transboundary issues, and management of local resources and community participation. The delayed implementation of a Land Use Policy is also cited as a constraint to improved water management.

Water for Production (WfP)

WfP is a shared responsibility between the MWE, MAAIF, and Ministry of Tourism, Trade and Industry (MTTI). For agricultural application, MWE is responsible for development of off-farm facilities and the MAAIF is responsible for on-farm facilities and activities. The major challenges for WfP include:

- Inadequate capacity in LGs.
- Planning and implementation coordination between MWE and MAAIF.
- Inadequate funding and high unit installation costs.
- Low sustainability of installed infrastructure.

Related to funding, inadequate capacity constrains the ability of LGs to improve the availability of WfP. WfP activities are not clearly understood and coordinated between the Directorate of Water Development (DWD) and the other implicated departments. The MAAIF activities create the demand for water, while MWE is to see to its supply. Hence the planning of facilities, especially the planning of bulk water multipurpose infrastructure, needs to be well coordinated.

High unit costs relate to inefficiencies in design, tendering, and supervision, and a lack of standards for and capacity of local private contractors. Sustainability of the facilities has to do with district capacity for planning and implementation, such that WfP is linked to its productive end use, and that there exists user ownership incentives for operation and maintenance.

4.10 Challenges Linked to Land Management

The management and administration of land ownership in Uganda is a major challenge due to the complexity of multiple land tenure systems in use, and an overall inadequate administrative capacity. Land tenure is mostly customary—both individual and communal—and inherited. Only about 10 percent of land is actually titled. Uganda's land

law recognizes undocumented customary tenure arrangements, but in practice it can be difficult for rural people to claim their customary holdings. There have been disputes over the alteration of land titles. There is little capacity at national and local government levels to deliver land services to the public. Equipment is lacking, land data such as cadastral maps are outdated, and regulation enforcement is weak. There is a low level of awareness on land issues, including rights and obligations, and excessive bureaucracy to access land titles or acquire land, fosters corruption.

The land tenure system constrains the ability of LGs to develop infrastructure. They have requested that the Government of Uganda establish a Land Compensation Fund to deal with land tenure issues impeding infrastructure projects.

The land tenure system has come to the fore in recent years in the context of oil and gas development where land speculation is causing an increase in land transactions. There is also concern that it will lead to social conflict, and an increase in the number of landless households, in an area where the local population is mostly dependent on land resources.

4.11 Adapting to Changing Climate

The MWE capacity for addressing climate change is weak. A recent review led by MWE and the Development Partners (DPs) that was endorsed by the Climate Change Policy Committee confirmed a significant need and demand for coordination and guidance in the climate change field. More specifically, the NDP noted the following capacity issues:

- No institutional framework for implementation of the United Nations Framework Convention on Climate Change (UNFCCC).
- Critical shortage of expertise.
- Lack of coordination mechanisms.
- Lack of weather and climate data and limited appreciation of its importance.
- Limited awareness at all levels about the causes and impacts of climate change and variability.

The Climate Change Unit in MWE is understaffed and underequipped and has no specialized equipment. It has only 3 technical staff, whereas the ongoing public service review identifies a need for 22 unit staff.

The review identified a number of priorities for action including: a mission statement on which communications could be based, a strategic framework of activity, a program to build up the staffing and capacities of the unit, development of a monitoring and evaluation system, a research agenda, and support to sectors and districts. Critical to any significant action is funding. The review pointed to the need for coherent donor support to the Unit via a basket fund or flexible funding facility.

Chapter 5. Corruption and Political Interference

Main Messages

“Corrupt and fraudulent practices are prevalent in a wide range of sectors and areas in Uganda, and the cost of corruption to the economy remains a cause for serious concern for all stakeholders.”

African Peer Review Mechanism (2009).

Corruption and political interference is understood here to mean all forms of abuse of position for personal gain. That gain may be in the form of political capital (votes), or money, or simply popularity. In whatever form the gain may be, it is an inconsistent application of the law—it is illegal, it is obstructionist, and it wastes scarce environmental and natural resources.

The examples of political interference and corruption are numerous. In almost all planning documents for natural resource sectors, political interference or corruption is somewhere cited as a constraint to effective management. In all natural resource departments, officials openly lament the problem of political interference.

5.1 Enlisting the Poor for Political Gain

Forestry, wetlands, wildlife, and water have all been victims of political interference. In several cases, local elected leaders, various commissioners, ministers, and members of parliament have subverted efforts by the National Environmental Management Authority (NEMA) and other officials to enforce environmental laws, bylaws, and defined procedures. Politically motivated individuals have undermined work (restoration activities, community planning processes, compliance enforcement) by openly supporting encroachment into wetlands and forest reserves.

Probably the most undermining and damaging interference is the high-level sanctioning of wetland and forestry encroachment that occurred in January 2006 when, during presidential campaigns, the President issued a Directive to halt evictions of encroachers in wetlands and forest reserves. Given the country’s environmental laws, the legality of the directive is highly dubious, but the effect is obvious. It has been interpreted as authorized unconditional encroachment into forest reserves and wetlands. It completely undermines efforts by the NEMA, National Forestry Authority (NFA), Uganda Wildlife Authority (UWA), Wetlands Management Department (WMD), Ministry of Water and Environment (MWE), and local officials to protect these resources, as per their legal mandates.

5.2 Political Influence for the Well Connected

Other high-profile cases of political interference involved the NFA and UWA. A strong NFA Board was forced to resign after it refused to agree to an unlawful contract. The subsequently appointed and compliant Board degazetted forest reserves and modified leasing arrangements. The NFA is still discredited in the public’s eye, and the forestry sector is in shambles. In the case of the UWA, a strong executive director and members of his staff were dismissed after refusing to increase the sitting allowances of the newly appointed Board.

The effectiveness of day-to-day environmental law enforcement depends on the connectedness of the violator. Well-organized, large-scale violators tend to be well connected. They use their influence to obtain support from elected officials who in turn pressure state institutions including NEMA and other officials to ignore the violations. Large-scale clandestine violators have resorted to threats of violence to deter district police and environment officials.

Another target of political interference is the Environmental Impact Assessment (EIA) process. The EIA Regulations require that an EIA be carried out for any project likely to have an impact on the environment. There are reportedly many cases where EIA processes have been subjected to political interference pressuring agencies to ignore contraventions of environment laws, or overlook necessary mitigation measures.

5.3 Theft and Bribery

There has also been substantial misallocation and misappropriation of funds. Development Partners' (DPs') experience suggests that the greatest fiduciary risks are in the water sector at local government level. According to Transparency International, in Uganda corruption is at its worst in the health and agriculture sectors. The National Agriculture Advisory Services (NAADS), responsible for local agricultural extension, has been under public fire and scrutiny for lack of accountability, poor transparency, and corruption in procurement. The proliferation of districts is also said to have "become a bureaucratic chain of corruption, as nepotism and corrupt procurement and tender processes have become the norm and so undermine service delivery" (APRM 2009).

Current prominent cases of corruption in the environment and natural resources (ENR) sector involve the NFA and UWA. Both are currently under investigation by the Inspector General of Government. The Auditor General's annual report routinely highlights avenues for embezzlement in the ENR sector. These include: bogus compensation claims conveniently settle out of court, bribes for licenses and work contracts, bribes paid to officers to underreport resource extraction, material and equipment theft, and unremitted environmental charges.

5.4 Human and Environmental Costs of Political Interference

Increasingly political interference pits citizens against environment officials and others in the environmental sector. In reaction to statements of high-level political officials, encroachers into wetlands and forest reserves feel they are within their rights. The resultant wetland degradation costs are as usually associated with lost ecosystem services: water quality degradation, water supply reduction, increased flooding, increased water borne diseases, among others. In recent years, organized groups, including army veterans, have invaded urban wetlands around Kampala. In many of these cases, officials cannot persuade them to leave. Recently (June 2011) military police were called in to do the evicting.

Another current hotspot of conflict is Mt. Elgon, where UWA officials are trying to deal with encroachers, illegal logging, and poaching. Park rangers are vilified, and encroachers look for favors from politicians. Deforestation and settlement on the mountain is blamed for the 2010 catastrophic landslide in Eastern Uganda that killed 300 people, and for generally increasing the vulnerability of local people to climate change and variability. In response

various local and international organizations are trying to replant areas of the mountain. At the same time, local and national politicians during recent campaigning directed UWA to stop harassing encroachers in the Park. Since then, the Ministry of Tourism, Trade and Industry (MTTI), responsible for UWA, has been trying to undo the damage and persuade the encroachers to leave.

Chapter 6. The Oil and Gas Sector

Main Messages

- *Transparency is a major concern in oil and gas sector development.*
- *There are major weaknesses in the Environmental Impact Assessment (EIA) process.*
- *No Strategic Environmental Assessment (SEA) as yet, but one is under way.*
- *No comprehensive environmental management plan to deal with biodiversity, air quality, fisheries, wastes, oil spills, affected communities, tourism, and so on.*
- *Limited public participation in the EIA process.*

6.1 Development of the Institutional Structure

Since the announcement of commercially viable oil reserves near Lake Albert, the government has been developing the nascent sector's institutional structure, and that structure is under close scrutiny by civil society organizations (CSOs) and others. A new oil policy is in place and a new petroleum law is in draft; the latter is under review and under considerable fire for incomplete adherence to the guiding principles of the Policy.

The National Oil and Gas Policy (2008) addresses exploration, development, and production of the country's oil and gas resources. Its goal is to use these resources to *contribute to the early achievement of poverty eradication and create lasting value to society* (MEMD 2008). It is based on the principles of resource use efficiency, environmental protection, cooperation, capacity and institution building, and transparency and accountability. The Policy recognizes that if the country's petroleum resources and revenues are not well managed, it could result in the "resource curse."

The draft Petroleum (Exploration, Development, Production, and Value Addition) Bill (2010) follows from the Policy. It is to set governance conditions for the sector, including the promotion of international best practices, competitive licensing, and the use and development of national content and capacity. It established the Petroleum Authority of Uganda (PAU) and a National Oil Company (NOC).

The Bill is still under review and there is concern that it has important gaps: too many issues are subject to negotiation during the contracting phase with oil companies, the protection of the PAU independence is unclear, competitive bidding provisions and contract approval and cancellation authority are unclear, fiscal arrangements are unspecified, objectives of state participation in the sector are unspecified, access to information is restricted, the procedure to seek compensation for damaged or lost land is unspecified, oil flaring is possible by way of a written request,³¹ and the mandate and structure of the NOC is not detailed. Several issues regarding revenue

Box 6.1 The "Resource Curse"

The resource curse is generally caused by factors relating to governance and macroeconomic management. Its symptoms include currency appreciation that hurts non-extractive sectors, inefficient management of the extractive sector, corruption and political conflicts over rent capture and management, dissipation of rents on consumption rather than investment, and inappropriate macroeconomic management.

Source: Reviews of the resource curse literature can be found in Frankel (2010) and Humphreys, Sachs, and Stiglitz (2007).

³¹ International best practices are no flaring and no venting.

sharing and audits are unaddressed, but could be forthcoming in the Revenue Management legislation provided for in the Policy.

Although the Oil and Gas Policy promotes high standards of transparency and accountability in all sector activities as well as the management of revenues, the Government of Uganda is under fire for insufficient disclosure, and a lack of checks and balances on contracting. The Petroleum Bill is generally considered to permit more secrecy than transparency, and not in accordance with the transparency and accountability promised by the Policy. Currently the nondisclosure of production sharing agreements (PSAs) is being challenged in the High Court.

6.2 Environmental Impact Assessment

The capacity for EIA in Uganda has come under scrutiny in recent years because of rapid development of the country's oil and gas sector in an environmentally sensitive, highly protected region of the country: the Albertine Graben. There is concern over the quality of the EIAs and their transparency and provision for public participation. There is concern that political expediency and interference is trumping strategic planning and careful examination of EIAs by mandated government authorities.

There is no doubt that the oil and gas sector in Uganda will be developed. Project-level EIAs guided by an overarching regional Strategic Environmental Assessment (SEA) can help minimize the impacts of that development—if conducted properly. The deficiencies in the EIA process need to be urgently addressed, and a SEA needs to be available to inform regional development. The latter is under way, with expected completion in late 2012.

The National Environmental EIA Regulations (1998) require certain projects to undertake an EIA to help manage environmental impacts. The National Environmental Management Authority (NEMA) is the authority mandated to oversee and enforce EIAs. Registered EIA practitioners conduct the EIAs, and submit an Environmental Impact Statement (EIS) to the NEMA and other relevant lead agencies for review. The EIS is to contain a description of the project, potential impacts, mitigation measures, possible alternatives, knowledge gaps, and economic analysis. Following NEMA's approval, the developer and other stakeholders are to implement the mitigation plan, complete with identified impacts, mitigation measures, indicators, costs, roles, and time frames for each action.

As of 2010, 2,500 projects have EIA approval from NEMA (MWE 2010c). In FY2009–10 alone, 395 EIA approvals were granted for projects covering all sectors of the economy. The rate of EIA approval is very high: in 2008, 98 percent of all EIAs submitted since the adoption of EIA in 1995 had been approved (Atukunda 2009).

A survey of EIA practitioners found that only 10 percent had some EIA training for eventual EIA qualification (Atukunda 2009). The majority had simply taken an EIA course during their degree program. This finding together with a review of EIAs from different sectors shows a seriously inadequate capacity for EIA in Uganda, and supports remarks by NEMA and the Uganda Association for Impact Assessment (UAIA) that EIA practitioners produce poor-quality work. EIAs tend to justify proposed projects rather than identify options to assist developers in making informed choices, entailing less economic and environmental costs. Rarely is an EIA part of project planning and design; it is usually done late, after the

project has been designed, or when it is under construction. Opportunities to identify alternatives and avoidable impacts are consequently forgone. Impact prediction, ranking, and identification of mitigation measures are inadequate to analyze the implications of the project. Nonetheless, the content of the EIS forms the basis for the conditions of project approval.

Currently, nowhere is the low EIA capacity so evident and worrying as in the oil and gas sector. The rapid development of this new sector in Uganda has severely stretched the already limited capacity of Uganda's EIA practitioners and approval authorities. At the same time, given the location of the oil and gas reserves—in the Albertine Rift—effective SEA at the regional level, and EIA at the project level is absolutely essential to try to avoid or minimize degradation of a high-value, complex, biodiversity-rich, natural asset.

A 2010 review of oil and gas EIAs compared a selection of recent EIAs with a selection that was reviewed (by the same authors) in 2006 (World Conservation Society 2010). The goal was to identify areas of improvement or deterioration and note where further improvement could be made. The analysis concluded that although there were some improvements over the period:

Generally, the quality of impact assessment is lower than expected, and there is inadequate evidence of a thorough application of assessment methodologies as presented in the documents. The determination of significance, in general, remains slightly arbitrary. Mitigation measures are sometimes vague and there is much generalization in documents that tends to be overlong and repetitive.

The review grouped the deficiencies in the EIS in terms of their overall presentation, provision of baseline information, analysis of alternatives, assessment of impact significance, mitigation measures, monitoring program, and the participation of stakeholders in the process. The following list provides a snapshot of the kind of weaknesses found:

- Unacceptable cutting and pasting from other projects or templates.
- Inadequate baseline data and little recognition of data and knowledge gaps.
- Lack of identification and analysis of alternative approaches that would avoid or reduce impacts.
- Disconnection between assessment methodology supposedly employed, and the significance ranking attached to the impacts.
- Residual impacts not clearly identified.
- No attempt to assess cumulative impacts, or impacts that may exacerbate situations known to be under pressure from other projects.
- Mitigation measures to address indirect impacts (such as inward migration, traffic effects on animals and humans) not proposed.
- Disposal methods for drilling mud and cuttings unclear.
- Little consideration of how to mitigate disturbance to animals.
- Adequacy of containment facilities to protect aquifers from spills not examined.
- No clarity regarding what impacts should be monitored.
- No cohesion between management plans and monitoring objectives.

- Constrained engagement of stakeholders—EIS released only after approval; unclear if or how public feedback is treated in the EIA.

The review acknowledges that given the rapid pace of the sector's development, there is extreme pressure on all actors in the EIA process, and human and financial resources to facilitate an effective EIA process are lacking. But it is evident that the pressure will only increase as exploratory drilling becomes appraisal drilling, followed by production wells, separation facilities, refining capacity, pipelines, and more roads, all constructed in next few years.

The concern over the application of EIA to oil and gas projects is exacerbated by a recurring theme in this new oil and gas sector: *lack of public participation*. The National Environment Act (NEA 1995) encourages public participation in the development of policies, programs, and processes for environmental management, and promotes EIA as the main tool for communicating environmental information about oil exploitation activities to stakeholders. Under the EIA Regulations, the developer is to *take all measures necessary to seek the views of the people in the communities that may be affected by the project*. EISs are supposed to be public documents, made available to the public for comment in languages understood by the majority of the affected people (Schwarte 2008). But despite this enabling policy and regulatory framework, effective public participation in EIA oil and gas projects remains limited.

There are practical barriers to public participation: constrained access to information, lack of basic communication systems, shortage of finances to disseminate information in appropriate formats and languages, and lack of public capacity to effectively participate in decision making. *If* people are aware of their statutory right to information, it remains difficult to obtain copies of the EIS during the review stage. On the other hand, if they have access to information, a lack of general knowledge often constrains the understanding of the long-term implications of natural resource decisions. Public understanding is highly dependent on the competence and communicative skills of public authorities and CSOs.

Various authors have made recommendations for improving public participation:

- An Oil and Gas Development Forum of companies, lead agencies, EIA practitioners, and nongovernmental organizations (NGOs) could facilitate discussion on environmental issues around hydrocarbon exploration.
- A Strategic Communication Plan for coordinated communication with stakeholders could be developed (Buyerah and Rukundo 2008).
- A survey of all actors in the EIA process could inform the development of a strategic communication plan (World Conservation Society 2010).

Various government and nongovernment stakeholders call for a SEA, or minimally a strategic approach of some kind; currently there is none. Instead, individual EIAs are done for each operation in isolation of all other developments in the area. This approach is ineffective. If there are 10 wells in a field, 10 individual EIAs done in isolation from each other provide no information about the overall environmental and social impacts of the field operation. Worse, without a strategic vision, the total impacts are likely to be greater than they would otherwise be. The individual EIA approach constrains the understanding of the cumulative pressure of the oil and gas sector's development on the larger area—be it

just the block, or the whole exploration area in the Albertine Graben. A SEA can indicate how to minimize the total impacts of the development. Hence, a SEA is urgently needed.

Chapter 7. Responding to Governance Issues

7.1 Raising the Profile of the Environment and Natural Resources (ENR)

At the national level, environmental issues are clearly part of the National Development Plan (NDP 2010). Its objectives include the sustainable use of environment and natural resources, and the restoration of degraded ecosystems. Environmental management is treated as one of the “enabling” sectors that provide for the efficient performance of all sectors of the economy, including the promotion of human health and sustainable population growth. It is also a “binding constraint” to economic development in terms of its being part of “weak public sector management and administration.”

According to the NDP, environmental concerns are to be integrated into all development initiatives. The institutional framework to support environmental management is to be strengthened at the national and local levels. Compliance with environmental laws and regulations is to be promoted, including the enforcement of Environmental Impact Assessments (EIAs) through monitoring and implementation of mitigation measures. There is to be improved management of chemicals, and a policy on e-waste and other hazardous wastes is to be developed. A Strategic Environmental Assessment (SEA) for the Albertine Graben is to be done and environmental information is to be improved. National capacity for coordinating and implementing a climate change adaptation strategy is to be developed and low carbon economic growth promoted. The sustainable use of water resources is to be ensured through (decentralized) catchment-based Integrated Water Resource Management (IWRM), strengthened regulation, capacity development, and transboundary cooperation.

Within the NDP’s agriculture strategy, Sustainable Land Management (SLM) is included as an objective for enhancing agricultural production and productivity. The governing objective of forestry is to restore forest cover to its 1990 level (4.9 million hectares) by 2015. Wetlands and rangelands are to be restored and monitored. In mining, the NDP calls for the development of laws and regulations that, while benefiting miners, also protect communities and the environment. This includes strengthening the monitoring of mining companies for compliance with environmental management plans, and the collection of baseline data for EIAs.

7.2 Improving ENR Performance

The Ministry of Water and Environment’s (MWE’s) Joint Sector Review (JSR) is a yearly forum for performance assessment, budget, and policy guidance. In October 2010, the JSR described overall ENR subsector performance, and the implications of that performance, as follows:

Persistent low funding and staffing levels are affecting government capacity and ability to manage and protect the nation’s vital natural resources base. This, in turn, impacts on cost-effectiveness and sustainability of water services delivery and natural resources management. Costs for water supplies are increasing due

to increasing environmental degradation, declining water quality and quantity. It is recommended that funding for ENR activities, especially those relating to river and lake catchment environmental management and protection be increased and the law be vigorously enforced. Close synergies need to be established between ENR interventions, water resources management and water supply planning and development.

Funding issues aside, MWE is trying to strengthen the ENR subsector. In 2008 the water supply and sanitation (WSS) and ENR sectors became two subsectors under MWE. Initially, each subsector had a separate Working Group overseeing its operations. In 2009 to increase WSS-ENR synergy, the Groups were merged, and coordination is now done through the Water and Environment Sector Working Group (WESWG). The ENR subsector is the weaker of the two. While Uganda's WSS is considered as the most coordinated and best documented in Africa, its ENR sector, conversely, has never received the same level of attention.

To remedy this imbalance, the last two JSRs (2009, 2010) have initiated activities to enable the ENR subsector to improve reporting and management. These include "undertakings" to be completed over the course of the next 2 years:

- Institutional review to refine and harmonize ENR roles and responsibilities within and outside ENR institutions.
- Restructuring of the Sector Performance Monitoring Framework (SPMF).
- Finalization and implementation of a strategy for boundary demarcation for forests and wetlands.
- Gazetting of wetlands.
- Development of a communication strategy and policy for climate change.

Institutional review to refine and harmonize ENR roles and responsibilities is necessary because the current structure of the ENR subsector is the result of 20 years of institutional reforms and funding rearrangements. Consequently, the roles and responsibilities of departments and agencies within MWE, those within local governments, and those of the environmental police, are unclear. Particularly problematic are the conflicting mandates of the National Environmental Management Authority (NEMA) and MWE. Currently under way, the review is a 2-year undertaking to examine relevant laws and legal documents that include the Constitution (1995), the National Environment Act (NEA 1995), and the Local Government Act (1997), and to revamp the ENR institutional structure with clear lines of accountability.

A restructured Sector Performance Monitoring Framework (SPMF) is to improve reporting, monitoring, and evaluation procedures by establishing clear linkages between ENR issues at the district and central levels. There has been a SPMF for WSS since 2003, the results of which are presented in the annual MWE Sector Performance Report (SPR). After WSS and ENR were joined under the MWE, the ENR sector was included in the SPR, but given the greater experience with WSS reporting, the SPR remained heavily weighted toward water and sanitation issues. That imbalance signaled the need to develop a new SPMF, which would provide guidance on analysis, and the interconnectedness of ENR and WSS issues. An improved SPMF also aims to raise public awareness of the ENR sector. Work on data

collection systems, and public consultation to identify key performance monitoring indicators is under way.

The strategy for boundary demarcation of wetlands and forests aims at reducing encroachment and degradation in these ecosystems. The draft strategy includes:

- Categorization of wetlands and forests.
- Demarcation of wetland boundaries in selected urban areas.
- Demarcation of Local Forest Reserve (LFR) boundaries.
- Reopening and marking of boundaries in Central Forest Reserves (CFRs).

Categorization of wetlands is being led by the Wetlands Management Department (WMD) with assistance from the World Resources Institute (WRI); forest demarcation by the National Forest Authority (NFA). The draft strategy submitted in December 2010 is currently under review.

The first ever *ENR Sector Investment Plan (ENR SIP)* was done in 2007 for the period 2009–09 to 2017–18. The total budget for the 10-year period ranged from \$567 million to \$653 million, depending on whether or not “land” was included as an ENR subsector. There was difficulty prioritizing components and operationalizing the ENR SIP, and consequently it never became an effective instrument for planning and resource mobilization. The JSR 2010 prioritizes the review and update of the ENR SIP.

An *Environmental Protection Force (EPF)* has been established to assist NEMA in the enforcement of environmental regulations. In mid-2011, some 600 police officers were trained and deployed to enforce environmental protection laws, particularly in wetlands and forest reserves.

The EPF is to undertake 24-hour surveillance of environmental resources. The main functions of the EPF are to monitor and enforce compliance with environmental laws, and provide timely and coordinated responses to environmental law enforcement across all departments and tiers of government.

7.3 Addressing Corruption

The NDP (2010) acknowledges that weak public sector management and administration is the number one binding constraint for development, and that it leads to, among other things, weak management of the environment and climate change. The Plan also notes that corruption is most rife in procurement, administration of public expenditure, and management of revenue, and that Uganda ranks 130th out of the 180 countries on Transparency International’s Corruption Perception Index.

Legislative Framework

Uganda ranks the best in Africa in terms of formulating the legal framework to fight corruption (APRM 2009). A Whistleblowers Protection Bill was passed in 2010 and it has an Anticorruption Act (2009), a Leadership Code Act (2002), an Access to Information Act (2005), and a Public Procurement and Disposal of Assets Act (2003). There is a special court to try corruption cases. There is also a National Anti-Corruption Strategy, and a Justice, Law and Order Anti-Corruption Strategy. Both strategies are yet to be implemented.

The Office of the Inspector-General of Government (IGG) was enshrined in the Constitution (1995). The IGG and Deputy IGGs (appointed by the President) oversee the “Leadership Code of Conduct,” the mechanism for ensuring ethical conduct by public officials and combating corruption.

There is a good legal framework to fight corruption, and agencies to do the job have been established. But these anti-corruption agencies—the Auditor-General’s office, the Public Procurement and Disposal Authority (PPDA), the IGG, the Directorate of Ethics and Integrity, and the Criminal Investigations Directorate of the Police—are underfunded. There are other reports that their decisions are not respected. A forum for anti-corruption organizations has been established, but it is not active enough to respond to pertinent issues.

There is also concern about the recently passed Whistleblowers Protection Bill. It is criticized for lack of incentives for individuals to disclose information on corrupt activities. Further, the Bill lacks provisions for protection of whistleblowers that find themselves threatened by the allegedly guilty parties.

The Access to Information Act (2005) has not been fully implemented. There has also been, reportedly, media censoring. In 2009 public participation forums were banned, and radio and television journalists were fired for discussing the accountability of politicians.

The PPDA is responsible for enforcing regulations to make procurement more transparent. In a recent Integrity Survey (PPDA 2010), over 80 percent of service providers acknowledged the presence of corruption in procurement contracting. Major challenges in addressing corruption in procurement were found to be the lack of total transparency at the evaluation stage, and interference in the procurement process by political and other local and central government leaders. Some agencies and local governments refuse to comply with the PPDA regulations, when, for example, information on procurement and awards is not made public. Conflict of interest stemming from the lack of objective criteria in selecting members of evaluation committees undermines transparency of procurement decisions

Water Sector Governance Initiative

In 2006 the MWE established a multi-stakeholder Good Governance Working Group to recommend measures to promote and monitor accountability and good governance in the water sector. In 2007–08 an action plan was implemented to tackle graft and sector inefficiency. In 2008 baseline studies were undertaken to raise awareness, and provide a means of monitoring attitudinal change. Citizens, contractors, local government officials, and the National Water and Sewerage Cooperation (NWSC) staff were asked about how they experience “integrity” in the provision of water services.

In 2009 a Good Governance workshop in Kampala involved key sector stakeholders who updated an anti-corruption action plan. Workshop participants noted that the Government of Uganda must realize that corruption is a major problem, and that it should provide leadership and improve anti-corruption policies to increase the effectiveness of development programs.

The MWE has a Good Governance Action Plan for 2009–12—it focuses on the provision of urban and rural WSS.

7.4 Oil and Gas Sector

The Ministry of Energy and Mineral Development (MEMD), Ministry of Finance, Planning and Economic Development (MFPED), and MWE are cooperating with the Norwegian Petroleum Directorate's *Oil for Development Program* to strengthen the management of the oil and gas sector in Uganda. The Norwegian Agency for Development Cooperation (NORAD) project period is 2009–14. The various activities of the Program are generally in their early stages, and include:

- Capacity needs assessment for implementing institutions (work under way).
- Review and revision of protected area plans for the Queen Elizabeth and Murchison Falls National Parks, and forest reserves under the NFA (work under way).
- Development of a monitoring program for the Albertine Graben, including identification of indicators for monitoring and improving usability of existing environmental data³² for environmental impact studies that will inform a SEA (work under way).
- Development of environmental regulations and standards.
- Development of guidelines for oil and gas exploration and production waste management (terms of reference have been prepared).
- Development of framework for compliance monitoring (draft TOR).
- Development of a national oil spill contingency plan (TOR prepared).

Transparency and disclosure of payments and revenues from oil and gas—in line with accepted national and international financial reporting standards—is supported in the National Oil and Gas Policy (2008). The Policy promotes participation in the Extractive Industries and Transparency Initiative (EITI), and certain parliamentarians have stated that they support Uganda's participation in the EITI. But the process for Uganda to participate in the EITI, by first becoming a “candidate country,” has not yet started.

Environmental Impact Assessment capacity building is being supported by the Wildlife Conservation Society (WCS). EIA training courses (for oil sector projects) have been developed to build EIA capacity among practitioners, government officials, and civil society. Course demand has been high, and has included government officials from various ministries including the MEMD, and members of the private sector engaged in oil and gas development. Training materials and instruction build participants' skills in the EIA review and on-site monitoring. The full course covers a 5-week period.

7.5 Reducing Vulnerability to Climate Change and Variability

Building Institutional Capacity

A communication strategy and a draft policy for climate change are adopted undertakings of the JSRs (2009, 2010) to raise awareness about issues and mainstream them into development planning. Uganda's National Adaptation Programme of Action (NAPA) was submitted to the United Nations Framework Convention on Climate Change (UNFCCC) in

³² NEMA's Environmental Sensitivity Atlas for the Albertine Graben (2010) was supported by NORAD.

2007. The communication strategy to raise awareness was developed in 2010, wherein some 350 local government officers were provided with information to enable them to develop climate change action plans in their respective districts. Additionally, 35 officers from various ministries/sectors were trained to act as contact points for climate change issues. The draft Climate Change Policy is to be finished by the end of FY 2011–12.

Some basic work on collecting climate data has been done. In collaboration with the World Food Programme (WFP), an observatory network of three automatic weather stations was established in Karamoja region. There was training on data collection, archival, transmission, and coordination with international weather centers and the way to interpret and disseminate data to local users. There are also plans to establish an authority to manage a national weather-monitoring system.

A Climate Change Unit has been established in the MWE but it lacks the requisite technical and research capacity to forecast and prepare the country for the impacts of climate change. The unit also needs to be capable of cross-sectoral engagement with stakeholders, given the cross-sectoral nature of the impacts of climate change.

The *Department of Meteorology (DOM)* maintains the weather and climate stations throughout the country. It is responsible for weather and climate data management and dissemination, including daily and seasonal weather forecasts and early warning advisories. It coordinates with a number of government ministries, particularly the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), as well as regional and international organizations. As in all ENR departments, the DOM suffers from insufficient funding. Its system of forecasting and early warning does not have adequate capacity to provide localized and sufficiently accurate weather information to resource users, particularly farmers.

Improving Water Management

The link between water resources management and climate change is recognized in the outcomes of the Climate Change Vulnerability Assessment and Climate Change Adaptation Strategy that includes six water-related adaptation strategy elements:

- New water (irrigation) infrastructure in drought-prone areas.
- Strengthened fish production with climate adaptation measures.
- Improved water quality, sanitation, and human health.
- Strengthened position of Uganda in regional, transboundary, and international negotiations.
- Improved monitoring, prediction, and planning based on IWRM principles, related to climate change impacts.
- Improved land-use management practices based on IWRM, related to climate change impacts.

These adaptation elements are to be addressed through a strategic plan for water management, improved coordination between ministries, decentralized structures to support district water management, and a SLM plan for agriculture.

A Water Supply and Sanitation Sector Strategic Investment Plan (WSS SIP) was finalized by the MWE in 2009. The Plan covers the period 2009–35 with a total financial requirement of \$14 million. For the nearer term—2009–10 to 2014–15—the average annual financing

need is \$287,000, which given projected government and donor funding, implies a gap of about \$81,000.

The Plan has various sector targets for improving water resources management, starting with a water resources assessment (which was completed in 2010), and the implementation of a national IWRM strategy by 2011.

The Plan notes the other line ministries with important roles in the water sector. MAAIF is particularly important because water for production (WfP) in agriculture is critical for maintaining farm resilience to climate variability. As discussed above a major challenge to WfP is coordination of MWE and MAAIF activities, as the two ministries share responsibility for WfP facilities. MWE is responsible for “off-farm” water activities including the planning and development of multipurpose infrastructures such as bulk water facilities, dams, valley tanks, and primary irrigation facilities. MAAIF is responsible for “on-farm” activities with respect to irrigation, livestock, and aquaculture.

To improve coordination between MWE and MAAIF, MWE is developing cooperation mechanisms and has established a memorandum of understanding (MOU) with the National Agriculture Advisory Services (NAADS) for coordinated support at the district level for WfP activities. MWE and MAAIF are jointly responsible for the WfP policy and strategy formulation for irrigation and livestock development.

An irrigation master plan is under way including five large-scale irrigation systems. The MWE has been working with the Japanese International Cooperation Agency (JICA) on formulating a plan for water resource development in the Lake Kyoga Basin.

Water resource management plans for the catchments are being developed. Bulk water studies have been carried out by the WfP Department, but plans for IWRM covering all aspects of water use are needed: irrigation, livestock, fisheries, industries, hydropower, tourism, wildlife, and urban development. The Directorate of Water Resources Management (DWRM) is starting to develop such plans, and has established water management zones (WMZs) to de-concentrate WRM. The MWE JSR 2010 undertakes to:

- Establish at least one operational structure for catchment-based WRM in four WMZs with specific focus on consolidating ongoing IWRM activities in all catchments by end FY2010–11.
- Develop a coordination framework for deconcentrated structures to aid district- and regional-level water management. These structures include the WMZs, Umbrella Organizations, Technical Support Units (TSUs), and the Water and Sanitation Development Facility (WSDF).³³

Transboundary water resources management is addressed through two major ongoing initiatives: Lake Victoria Basin Commission (LVBC) that involves the East African Community (EAC) member states, and the Nile Basin Initiative (NBI) involving a total of 10 countries in the Nile Basin. Under the LVBC initiative, one of the major issues of concern is the water release policy for the Nalubaale dam, which affects all the EAC member states. Under the Nile Basin Initiative, the riparian countries agreed on a shared vision, with the

³³ The WSDF is an investment and technical support instrument for channeling donor funds to small urban centers that are outside of the NWSC’s mandated area.

objective “to achieve sustainable socio-economic development through the utilization of, and benefit from, the common Nile basin water resources.”

Disaster Preparedness

The National Platform on Disaster Risk Reduction (DRR) and Management is to facilitate implementation of the Policy on Disaster Risk Reduction and Management. It coordinates DRR and management and information sharing in accordance with the Hyogo Framework for Action 2005–15. It brings together all stakeholders in disaster management under the chairmanship of the Permanent Secretary Office of the Prime Minister, and is composed of representatives of the Development Partners (DPs), civil society organizations (CSOs), the private sector, other line ministries, and the media.

The chair of the Platform is vested in the Department of Disaster Management in MWE. The Department works through lower-level governments via District Disaster Management Committees and the Sub-County Disaster Management Committees. Sector working groups are in place to address specific concerns regarding each sector.

The Disaster Risk Reduction and Management Policy was developed, but it contains an important gap in its approach to drought risk reduction, particularly in the areas of preparedness, resilience, and prevention. Other gaps are in the areas of governance, drought risk identification, and knowledge management.

Constraints to the Performance of the Disaster Management Sector include (NDP 2010):

- Inadequate policy and legal framework for DRR and management.
- Poor early warning systems largely due to inadequate meteorological services.
- Few resources for relief and rehabilitation assistance to disaster-affected people.
- Inadequate data, especially on costs and implications of disasters.
- Inadequate capacity for mainstreaming DRR at national, district, and community levels.

7.6 Sustainable Land Management

The *Strategic Investment Framework for Sustainable Land Management (SLM SIF)* was drafted in 2010 by MAAIF³⁴ as part of the NDP. The investment framework covers the period 2010–20, requiring a total budget of \$92 million. The SLM SIF states that land degradation threatens to significantly undermine the future productivity growth in agriculture and forestry sectors in Uganda, and that a productivity revolution is urgent, and must be based on a technology change that systematically integrates SLM. It also notes that the SLM can bring climate change issues into the public discourse.

³⁴ The U-SIF SLM had direct support from key TerrAfrica partners including the New Partnership for Africa's Development (NEPAD), United Nations Development Programme (UNDP), Food and Agriculture Organization (FAO), and United Nations Convention to Combat Desertification–Global Mechanism (UNCCD-GM). The Comprehensive Africa Agriculture Development Programme (CAADP) partners are Department for International Development (UK) (DFID), United States Agency for International Development (USAID), Norway, the Swedish International Development Cooperation Agency (SIDA), and GIZ, who directly or indirectly supported the process.

The goal of the SLM SIF is to promote key sector cooperation to improve natural-resource-based livelihoods and other ecosystem services. It is a multi-sector national initiative to be spearheaded by the MAAIF—the focal ministry for the United Nations Convention to Combat Desertification (UNCCD), the Comprehensive Africa Agriculture Development Programme (CAADP), and TerrAfrica. The SIF describes an integrated cross-sector approach to investing in solutions to crosscutting SLM challenges that scales up and mainstreams SLM into sector Development Strategy and Investment Plans (DSIPs). It has a 10-year plan organized into two phases: 2010–15 and 2015–20.

An Inter-Ministerial Cooperation Framework (IMCF) was signed in 2007. The SLM SIF starts from the position that if land degradation is to be addressed, a coordinated institutional effort is required from all actors: the Ministry of Lands, Housing and Urban Development (MLHUD), MAAIF, MWE, MEMD, NFA, NEMA, Ministry of Tourism, Trade and Industry (MTTI), nongovernmental organizations (NGOs), CSOs, and the private sector. The IMCF for the Development and Implementation of a country SLM SIF is a MOU between MAAIF, MWE, MEMD, and MLHUD. Its objective is to facilitate harmonization of activities among various players at the national and local levels through the SLM investment framework.

A SLM Country Platform provides a forum for all key stakeholders and actors in land management. An Inter-Ministerial Steering Committee composed of Permanent Secretaries from MFPED, MAAIF, MWE, MLHUD, MEMD, MTTI, and the Ministry of Local Government (MOLG) is to provide policy guidance and oversight. The Steering Committee is to meet quarterly. At the second level there will be a National Technical Working Committee (TWC) that will provide overall technical guidance.

The Agriculture Sector Development Strategy and Investment Plan (AG DSIP) was also done in 2010 by MAAIF. The Plan is consistent with the SLM SIF in recognizing the need to overcome the institutional barriers to addressing land degradation with a coordinated interministerial approach. The DSIP includes an SLM subprogram, the objective of which is “*enhanced productivity of land through sustainable management of soil and water resources.*” This objective will be pursued collectively under the IMCF on SLM.

In accordance with its mandate, the AG DSIP SLM activities aim to:

- Scale up proven SLM best practices including watershed management, conventional soil and water management practices, biomass energy/charcoal saving technologies, small-scale irrigation, and improved water supply to pastoral communities.
- Strengthen the institutional and policy environment for SLM by mainstreaming SLM into national, district, and sub-county development and environmental action plans.
- Strengthen capacity of UNCCD/NAPA Focal Point to coordinate, monitor, and supervise SLM activities.
- Improve capacity of local governments (LGs), CSOs, and others to plan, implement, and monitor SLM.
- Strengthen capacity for climate change monitoring and adaptation.
- Develop capacity for local institutions to enforce bylaws and regulations in SLM.
- Develop land-use plans and promote avenues such as land tenure to reduce conflicts around natural resource use.
- Strengthen commercial and advisory services for SLM (led by NAADS and NGOs).

- Promote SLM research and dissemination (led by the National Agriculture Research Organization, NARO).
- Improve SLM knowledge management by developing and operationalizing geographic information systems (GIS) supported by management information systems (MIS).

The importance of agriculture to the Government of Uganda is reflected in the Medium Term Expenditure Framework (MTEF). The five-year period starting in FY2009–10 shows projected allocations of \$500 million for NAADS and \$21 million for NARO, which implies a potential doubling of the annual NAADS budget and a 20 percent increase for the NARO budget.

7.7 Solid Waste and Chemical Pollution

The *National Environment (Waste Management) Regulations* (1999) are in place for control of waste handling at different levels. They require urban authorities (municipalities and town councils) to take all practical steps to ensure that waste management is carried out in a manner that will protect human health and the environment, against the adverse effects of poor waste handling and disposal. The regulations also provide for recovery and recycling as well as compositing of solid waste.

Uganda Municipal Waste Compost Programme is a small-scale Clean Development Mechanism (CDM) Programme of Activities (PoA) implemented by World Bank in different municipalities of Uganda. The goal of the program is to avoid methane emissions from municipal waste landfills by composting wastes, and using the organic matter in wastes as humus for soil conditioning and plant growth. As multiple towns and cities are expected to participate in this Programme, a CDM PoA was designed.

The towns and municipalities involved in the Programme handle from about 50 to 200 tonnes of waste per day with the average being about 70 tonnes per day. The municipalities included in the PoA are responsible for implementing the solid-waste-composting activity from the construction of the facility to the selling of the compost products. NEMA, acting on behalf of the municipalities, maintains the data about each CDM Program Activity (CPA) and shares them with the International Bank for Reconstruction and Development (IBRD). As of April 2011, there are eight municipal-waste-composting sites (CPAs) under the program.

The Strategic Approach to International Chemicals Management (SAICM) is a global initiative that was adopted in 2006 to ensure that by the year 2020, chemicals are produced and used in ways that minimize adverse impacts on the environment and human health. Uganda is party to the SAICM, among a number of other protocols for the sustainable management of chemicals. In 2008 a situational analysis revealed the major challenges the country faced in the management of chemicals in the various sectors (agriculture, health, energy and mining, water supply and sanitation, academic and research). The Sound Management of Chemicals (SMC) was consequently identified in the NDP as an emerging environmental issue requiring attention.

Work to date on the SMC has been spearheaded by NEMA. In 2009 it produced two reports related to the sound management of chemicals: a situational report, and a health and

environment analysis. In 2010 NEMA produced a National Action Plan for the SMC in Uganda.

Most recently, spurred by the situational report, NEMA research focused on the agricultural sector, in terms of a cost-benefit analysis (CBA) of an SMC investment targeting improved farm use of pesticides. The research indicates that it would be beneficial for the country to start moving toward the SMC. The estimated budget requirement of a 15-year program is \$17.2 million. But very few funds have been allocated to institutions involved in the governance of chemicals in the country.

7.8 Indoor Air Pollution

There has been little effort on the part of the Government to acknowledge and address the problem of indoor air pollution. The Energy Policy (2002) notes that most of the energy technologies used in Uganda are inefficient and consequently are an energy conservation issue. Pollution is only mentioned in terms of vehicular pollution. The Renewable Energy Policy for Uganda (2007) notes that the use of energy-efficient stoves would reduce indoor air pollution, but does not go any further than that. In the NDP 2010, the promotion of energy-efficient stoves is a strategy to take pressure off forest resources. The Plan speaks of establishing a fund for financial support to artisanal construction of stoves, and training to households and institutions in the use of energy-saving stoves. The Plan does not mention the problem of indoor air pollution in terms of its effects on human health.

The Energy Policy notes that the Government and private sector have promoted improved stoves and kilns and substitute fuels (liquefied petroleum gas, kerosene) for cooking, but adoption has been slow. In a presentation addressing the problem of indoor air pollution, an MEMD official identified the following barriers to adoption of reduced energy technologies (RETs):

- Lack of information.
- High entry costs for RETs.
- Inadequate financing mechanisms.
- Inadequate local manufacturing capacity of RETs.
- Social barriers (community union, smoke for pests)

At the grassroots level, NGOs have been the most active in promoting energy-efficient cook stoves. Under the Partnership for Clean Indoor Air Programme,³⁵ a pilot study on indoor air pollution was led by a local NGO in 2005. From that initiative, the UGASTOVE NGO started a program to develop a market for improved stoves in Uganda. UGASTOVE's partners include GIZ and the Center for Entrepreneurship in International Health and Development. Another NGO that has worked on indoor air pollution is the Integrated Rural Development Initiative (IRDI). It has promoted RET stoves and raised awareness about indoor ventilation. Both UGASTOVE and IRDI have partnerships with MEMD and GIZ, among others.

7.9 Clean Development Mechanism in Uganda

Uganda's Designated National Authority (DNA) was established in 2005 in the MWE. Originally administered by one staff in the DOM, in 2009 a Climate Change Secretariat was

³⁵ Launched at the World Summit on Sustainable Development in 2000.

established and additional staff hired. NORAD and the United Nations Development Programme (UNDP) have assisted in capacity building.

As of writing, a CDM PoA for improved cook stoves is under validation, and four CDM projects have been registered:

- West Nile Electrification (run of the river) Project with 3.5 megawatts (MW) installed capacity (February 2007).
- Uganda Nile Basin Reforestation Projects 1 to 5. No. 3 registered under the CDM, other four yet to be verified. Eventual total in the Rwoho Central Forest Reserve plantation is 2,137 hectares, generating up to 700 jobs for the local population.
- Bugoye Run-of-River Hydro-electric Project (13 MW).
- Uganda Municipal Waste Compost Programme PoA.

The Uganda Investment Authority, responsible for marketing CDM possibilities, identified about 30 potential sites for small CDM hydroelectric power projects. Uganda's Electricity Regulatory Authority currently lists 17 small hydro projects under development.

7.10 National REDD Strategy for Uganda

The Reducing Emissions from Deforestation and Forest Degradation (Plus) (REDD+) Readiness Preparation Proposal (R-PP) was submitted to the Forest Carbon Partnership Fund in June 2011. It is the first formal step in the formation of a National REDD+ Strategy. The process was coordinated by MWE and NFA. The latter serves as the REDD Focal Point for Uganda. Both institutions collaborated with other government ministries and agencies, NGOs, the private sector, academia, cultural institutions, and DPs, among others.

The REDD+ R-PP presents priority actions for implementation during 2012–14. The outputs of the actions will form the basis for the Strategy. The Proposal seeks \$12 million to finance the following:

- Defining institutional arrangements for implementing Uganda's REDD+ Strategy.
- Developing operational procedures and guidelines for REDD+ implementation.
- Capacity building for REDD+ implementation.
- Defining strategies for addressing deforestation and forest degradation, the role of conservation, sustainable forest management, and building carbon stock.
- Developing a national forest reference emissions level and forest reference level, including future scenarios.
- Developing a national forest-monitoring system to measure, report, and verify Uganda's REDD+ actions.
- Developing a framework for assessing social and environment impacts of REDD+.

7.11 CSOs at Work in ENR

The Uganda National NGO Forum brings together over 400 CSOs that work to improve public service delivery to Ugandans. Within the Forum there are over 100 CSOs active in Uganda's ENR sector. The Forum has tried to establish dialogue with the World Bank and other donors. It has called on the Bank to strengthen its involvement in promoting good

governance and fighting corruption, which its members see as the single biggest threat to development in Uganda.³⁶

Activities by the ENR sector CSOs include policy support, environmental advocacy, mobilization of resources, capacity building for environmental management, environmental awareness and education, and implementation and monitoring of projects for the protection and restoration of the environment. They are active in all regions of Uganda. Thematic areas cover forestry, wetlands, pollution, energy conservation, agriculture, rainwater, climate, and governance. Engagement in the latter is expected to increase (box 7.1).

In 2009 CSOs participated for the first time in the ENR Sector Performance Review (SPR), and JSR processes. As a group they explored mechanisms for better coordination and strengthened stakeholder collaboration, and contributed to the content of the ENR SPR, under the leadership of the Ugandan NGO Environment Alert.

About 60 percent of CSOs are active in the forestry sector, to promote the sustainable use of forest reserves, improve reforestation, information generation and dissemination, and engage in policy dialogue to influence policy and planning at the central and local levels. The umbrella group for forestry CSOs is the Uganda Forestry Working Group.

Box 7.1 CSOs on Governance

“CSOs have become more vigilant with regard to issues of environment and rural development. . . More participation by Community Based Organizations, especially the media and CBOs, is expected to generate demand for accountability from environment management institutions.”

Source: National Development Plan 2010.

In wetlands, CSO activities facilitate the development of wetland management plans, and the creation of local resource users associations to restore and manage ecosystems. In some areas, CSOs are helping local associations establish ecotourism. They also fill capacity gaps of local governments and NEMA in policing and enforcing wetland management efforts.

The Anti-Corruption Coalition of Uganda brings together 50 organizations committed to fighting corruption and promoting good governance.

In recent years, oil and gas issues are activities pursued by CSOs. Disclosure and transparency with respect to production sharing agreements (PSAs) are currently being sought by Ugandan Civil Society activists in the umbrella group Publish What You Pay—Uganda.³⁷ The Group has petitioned nationally and internationally for improved transparency in PSAs. It appealed to Britain to adopt legislation requiring transparency in extractive industries, because the oil and gas companies operating in Uganda are listed on the London Stock Exchange.³⁸

The Uganda National Farmers Federation (UNFFE) is the largest farmers’ NGO in Uganda, and includes community associations and service providers. Its mandates include policy advocacy, capacity building, and advisory services to farmer organizations, dissemination

³⁶ Uganda CSOs Share Views on World Bank Support, World Bank, News and Events, March 27, 2009.

³⁷ Publish What You Pay is supported by Revenue Watch International.

³⁸ The group is pursuing legislation similar to the Dodd-Frank Act (2010) in the United States that requires companies to disclose their financial agreements with host countries, on a project-by-project basis.

of information, and mainstreaming into farmer and agricultural development the cross-cutting issues of gender, health, and natural resource management. The UNFEE has been working with the MAAIF to improve the service delivery of the NAADS. It has surveyed farmers for their perceptions of and adaptive actions for climate changes. The SLM strategy recognizes the UNFEE as an important platform for SLM initiatives to reach the grassroots population.

Section III. Special Focus Sectors: Forests, Wetlands, and Fisheries

Chapter 8 focuses on the forestry sector. It draws on sector data from the National Forest Authority (NFA), National Environmental Management Authority (NEMA), Ministry of Water and Environment (MWE), and the Food and Agriculture Organization (FAO). The analysis of forestry institutions is drawn from a recent (2010) review of the forestry sector commissioned by MWE, with support from the Norwegian Agency for Development Cooperation (NORAD).

Chapter 9 focuses on wetlands. It draws on sector data and information from both the Wetlands Management Department (WMD) and NEMA; and strategy documents from the WMD. It also benefits from recent (2009) and ongoing work by the World Resources Institute (WRI). Additionally, case study work was undertaken in four districts: Kasese, Bushenyi, Kumi, and Kabale.

Chapter 10 focuses on fisheries, with attention to non–Lake Victoria fisheries to the extent that data were available. Data and information was obtained mostly from the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) and Uganda Bureau of Statistics (UBOS). Case study work was undertaken in Kasese, Bushenyi, Hoima, Soroti, and Mukono districts chosen either for their fish farming potential, or because they host major non–Lake Victoria fisheries.

Chapter 8. Forestry

Main Messages

- *Forestry requires a substantial turnaround to meet growth targets for the sector.*
- *The institutional structure for forestry management as originally envisioned is sound but has not performed well because of unbalanced funding and political interference and corruption.*
- *The Forestry Sector Support Department (FSSD) is seriously deficient in its mandate to coordinate and regulate the sector.*
- *The National Forestry Authority (NFA) is suffering from political interference and a liquidity crunch.*
- *Community engagement in forest management is low.*
- *Private investment in plantation forestry has taken off.*

Cited in various government reports, the recommended level of national forest cover for a stable ecological system in Uganda is 30 percent of the total land area: about 5.9 million hectares. The country has currently about half of that amount.

As of 2010 Uganda's forest cover is estimated at 3 million hectares. Over the 20 years between 1990 and 2010 forest cover declined from 20 percent to 15 percent of total land area, which is a reduction in *forest* area of 37 percent. The average annual deforestation rate since 1990 is 2.29 percent. But the rate is accelerating: it was 2.03 percent in the 1990–2000 period, then 2.39 percent in the 2000–05 period, and now, the most recent estimate is 2.72 percent per year in 2005–10.³⁹

Uganda is counting on its forests to contribute significantly to the nation's economy. In Uganda's National Development Plan (NDP 2010) it is a primary growth sector, considered ideally suited to contribute to poverty reduction, wealth creation, and modernization of the country. But the trend in degradation seriously threatens the sector's capacity to meet its growth targets of 6 percent per year. Uganda is also undertaking the Reducing Emissions from Deforestation and Forest Degradation (Plus) (REDD+) process. It has submitted its REDD Readiness Preparation Proposal (R-PP) (June 2011) to develop a National REDD Strategy, which indicates a commitment to addressing climate change through the sustainable management of its forestry resources. The synergy of these imperatives—economic growth in forestry and climate change mitigation—drive the urgency in addressing governance and management issues and deficiencies in country's forestry sector.

³⁹ Forest cover data are drawn from the Biomass Technical Report (2009) and the Food and Agriculture Organization (FAO 2010). The Biomass report is the result of a mapping exercise conducted in 2005 that covered the whole of Uganda, involving Landsat imagery and ground truthing. A similar mapping was done in 1990. In the 2005 mapping, forest definitions were made consistent with those of FAO's Land Cover Classification System. FAO bases its estimates of forest cover on the biomass reports. The FAO 2010 estimates of forest cover are about 300,000 hectares less than the NFA's.

8.1 Deforestation, Degradation, and Dependency

Deforestation and degradation in Uganda is caused by agricultural expansion into forested land, unsustainable cutting for wood fuel, unsustainable timber harvesting, and, to a moderate degree, livestock grazing and bush burning.

Drivers of Deforestation and Degradation

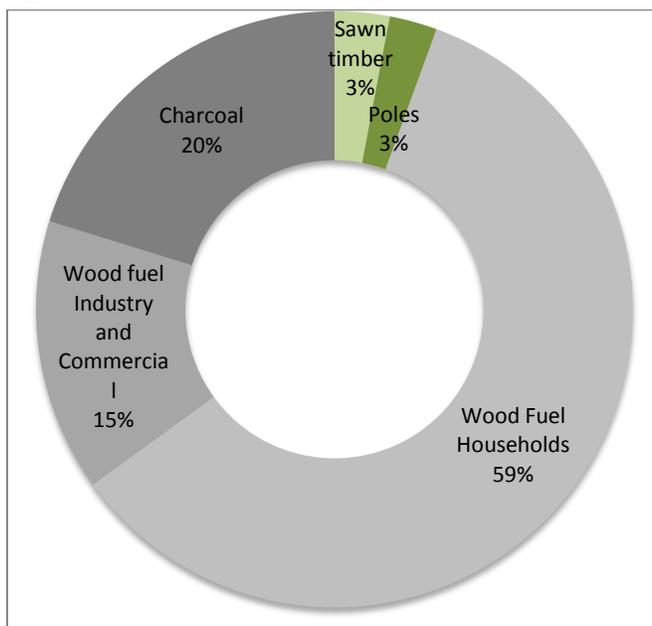
Forest conversion for agricultural purposes is largely driven by population growth, and the need to bring more land under cultivation to meet food requirements. The situation is exacerbated by poor agricultural practices that degrade soils and reduce crop yields. Commercial agriculture development has also resulted in forest conversion.

Forests and woodlots are degraded by unsustainable removal of trees for firewood and charcoal production. Forests and woodlands on private or community-owned land area are most affected. The demand for wood fuel is high: over 90 percent of Ugandans use it as their main source of energy. The demand for charcoal is particularly high in urban areas, whereas firewood demand is high in rural areas. In both areas, alternative energies are limited.⁴⁰ Charcoal is cheap, and the regulation of its trade is weak. Firewood generates income for rural households, it fuels small and medium enterprises (SMEs), and enforcement of harvesting laws is weak. Charcoal conversion technology is wasteful, as is firewood harvesting.

Figure 8.1 shows that about 94 percent of cut round wood timber went to fuel wood and charcoal production in 2007. In that year 7 million tonnes of charcoal and 25 million tonnes of firewood were produced, and 64 percent was for household consumption. These volume estimates contain both formal and informal market components: 95 percent of household wood fuel is nonmonetary, informal activity. Nearly all of the charcoal production, on the other hand, is recorded a formal monetary activity.

Unsustainable timber harvesting results from high demand, wasteful conversion, lack of forest management plans (FMPs), lack of harvesting guidelines and standards, pressure on District Forest Officers to generate revenue from timber licenses, and the general mistrust of forest officials by the public. Most timber is currently procured from private lands, but the Ministry of Water and Environment (MWE) estimates that timber production from private forests will be exhausted by 2013.

Figure 8.1 Use of Round Wood



Source: UBOS 2010; NFA Annual Report 2006–07.

⁴⁰ Hydroelectric power—the main alternative to wood fuel—provides energy to only 300,000 households.

Forest Dependency

In the rural areas, almost everyone—some 24 million people—depend on forests and tree resources for their basic needs, which includes firewood, building poles, furniture, and medicine. The forestry sector (formal and informal) employs 850,000 persons, or about 8 percent of the country's labor force.

Some 2.7 million people living in parishes adjacent to forest reserves are particularly dependent on forests for energy and construction materials, food security, clean water, and even their livelihoods. For these people, forest products contribute about 20 percent to household incomes.

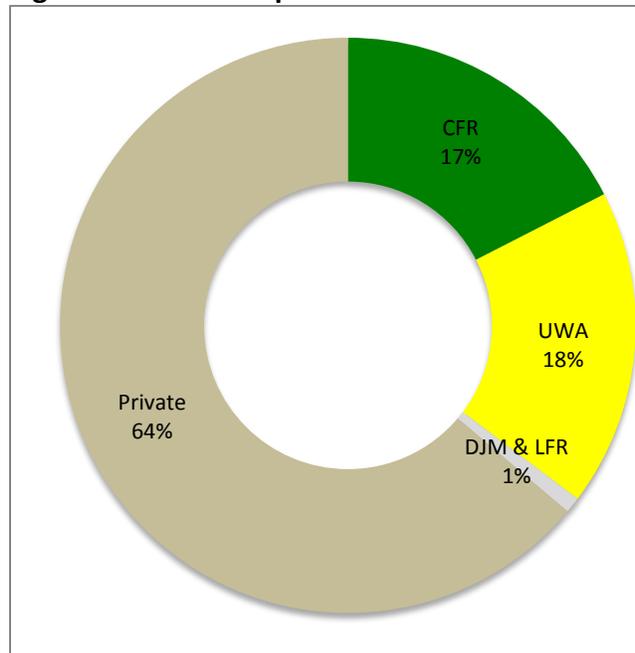
As a result of deforestation, wood is becoming scarce, especially in some of the northern and eastern districts. Evidence indicates that the distance walked by women to secure fuel wood more than doubled over a period of 7 years.⁴¹ In some cases, households resort to agricultural residues for energy. Agroforestry supplements household tree resource needs, but is practiced less in the northern and eastern districts. Only 20 percent of the households use fuel-saving technologies.

8.2 Forest Ownership

Ownership of forest resources is split between the government and private sectors. The government holds the country's Permanent Forest Estate, defined in the Forestry Policy (2001) as *land that is set aside for forestry activities in perpetuity for Ugandans*. It consists of some 1.9 million hectares, representing about 10 percent of the total land area of Uganda. According to the Policy, this is the minimum area that the Government of Uganda has committed itself to keep as forestland permanently. It covers Central Forest Reserves (CFRs), Local Forest Reserves (LFRs), and forested areas in national parks. There are 1,266,000 hectares of gazetted forest reserves (both CFRs and LFRs), and 730,000 hectares of national parks and game reserves.

Private forestland accounts for most of the country's actual forested area. For 2005 figure 8.2 shows ownership shares of *standing* forests—defined as topical high forests (THF), woodlands, and plantations. Sixty-four percent of forestland is under private or community ownership; 36 percent, is government owned, most of which is controlled by either the NFA or Uganda Wildlife Authority (UWA).

Figure 8.2 Ownership of Forestland 2005



Source: Biomass Report 2009.

⁴¹ APRM 2007. Average distance in 2000: 0.73 kilometers (km); 1.5 km in 2007.

LFs are under district control, and there are some areas where the NFA and UWA share control under dual joint management agreements.

Deforestation Rates

Deforestation rates are typically higher on private land: over the 1990–2005 period, the average rate of deforestation on private land was 2.7 percent; on public land it was 0.8 percent. The left graph in figure 8.3 shows the resultant changes in forest area for the two sectors. Within the public sector, the right graph of figure 8.3 decomposes the change in public forest area between that held by the NFA and that by the UWA. The UWA lost 6 percent of its area, while the NFA lost 17 percent.

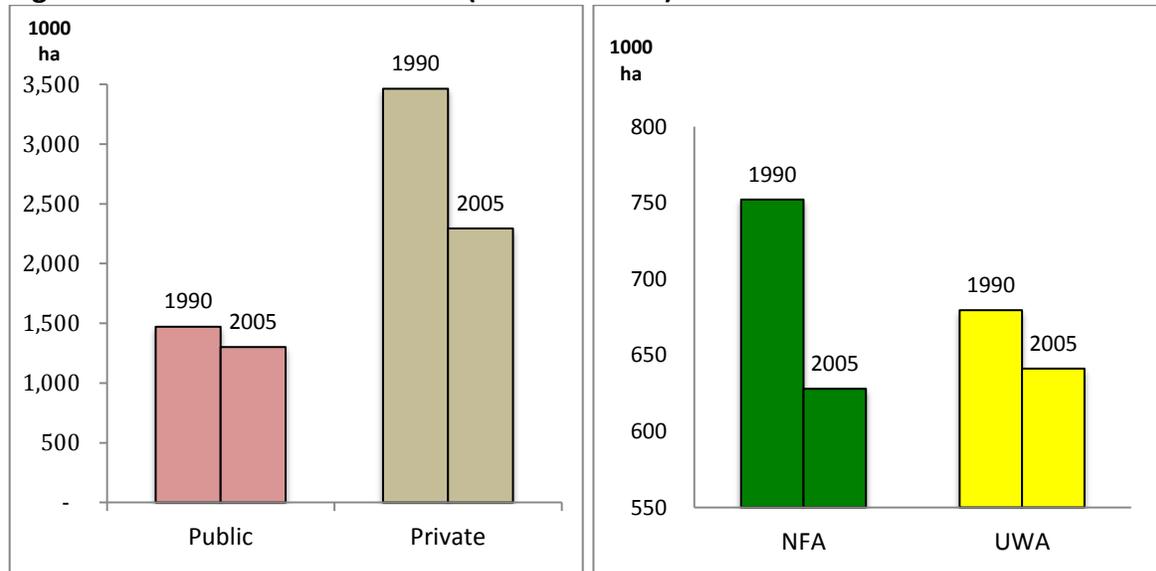
The UWA has been clearly more successful at managing its forests. Reasons given for its relative success relate to its relatively higher level of public trust and respect, its management competency, and its (armed) capacity to enforce wildlife regulations.

Plantation Forests

The FAO estimates that in 2010 Uganda will have 51,000 hectares of forestry plantations. Since 2005 the planting rate has been about 5,000 hectares/year (ha/yr) and the cutting rate is less than 1,000 ha/yr. This trend is a reversal of what occurred in the pre-2005 period when cutting exceeded replanting. As a result of that earlier trend, most of the sizeable timber plantations are now below 6 years old. Since the rotation age for harvest for timber is 20 years, it will be a decade or more before these are harvestable. This is of concern because if timber requirements are to be met from domestic plantations and about 4,000 hectares are needed for annual harvest, at current levels of demand.

In the face of declining plantation stocks, in 2004 the NFA started to establish its own plantations. As of 2010 it had 13,324 hectares of immature forest plantations. It also has less than 1,000 hectares of mature forest plantation. The NFA will need to find alternative

Figure 8.3 Deforestation on Public (NFA and UWA) and Private Forestland



Source: Biomass Study 2005.

Note: NFA = National Forest Authority; UWA = Uganda Wildlife Authority.

sources of revenue to replace the decline in its plantation revenue.

Most plantations (some 35,000 hectares) are privately owned on leased CFR land. Private sector investment in forest plantations has been steadily increasing as a result of the NFA's strategy to promote public-private partnerships (PPPs) wherein the CFR land is leased. Investors can vary from small tree growers to large multinational forestry companies, but most are small to medium operations with up to 500 hectares. Investment incentives are available through the Sawlog Promotion Grant Scheme (SPGS), which provides technical assistance and financial support in the form of a direct subsidy or grant of US\$600,000/ha (\$330) paid in the first 2 years after planting, if planting standards as set out in the agreed contracts are met.

Apart from forestry plantations on gazetted reserves, there are forestry plantations on private land. But due to limited monitoring and reporting by district forestry officers, data are scarce. It is estimated that there may be 25,000 hectares of immature plantations aged 10 years and under, for poles, firewood, and timber, and some growers are known to have adopted sustainable forest management (SFM) standards.

8.3 Forestry as a Growth Sector in the National Development Plan

According to the NDP, forestry is to become an engine of growth, contributing at least 6 percent to total gross domestic product (GDP). That contribution is expected to result in the creation of 321,000 jobs in the formal sector, and another 3 million informal jobs. This would require a considerable turnaround in the sector, given recent trends in its economic performance.

In 1988 the share of forestry in GDP was 2.2 percent; it declined to 1.7 percent by 1997 and then rose to 3.4 percent by 2008. The increased contribution of the sector was welcome, but erratic growth rates indicate a liquidation of the forest estate rather than its sustainable development: between 1988–1997 average growth was 4.7 percent, between 1998–2002 it accelerated to 7 percent, and, most recently, in 2004–08, it fell to 3.9 percent per year. In 2009–10 it is expected to be 2.4 percent.

According to the NDP, investment in forestry is expected to produce annual growth rates ranging from 5.7 to 6 percent between now and 2014–15. The budgeted main program is community tree planting, which over the 5-year period requires US\$4 billion (\$2 million).

The NDP aims to restore national forest cover to its 1990 extent of 4.9 million hectares (1990 levels) by 2015. This is achieved through strategies and interventions that aim to:

- Promote reforestation and afforestation.
- Strengthen management and policing of forest reserves.
- Reduce demand for wood fuel as energy source.
- Introduce use of timber substitutes.
- Promote forestry-based industries and trade such as apiculture and natural medicines.
- Promote forest tourism.
- Strengthen participation in global carbon network.

With a political commitment to improve forest governance and facilitate the operation of the sector's institutional structure, forestry's declining performance may be reversed. But that reversal is unlikely to occur fast enough to realize the NDP 2010 targets.

8.4 Forestry Institutional Structure

In 1998, in line with a government wide restructuring program and in response to concern about the deteriorating state of the country's forests, the Government of Uganda started a comprehensive reform process in the forestry sector. By 2004 there was a new forestry policy, the first national forest plan, a new forestry law, and the existing Forestry Department was replaced with three new institutions: the Forest Sector Support Department (FSSD),⁴² National Forestry Authority (NFA), and District Forest Services (DFS).

As a result of the restructuring, the functions of the defunct Forestry Department are now separate: regulatory activities are assigned to the FSSD under the direct control of the Ministry,⁴³ while implementation activities are the responsibility of the NFA and DFS. The FSSD is mandated to coordinate the entire forestry sector, to set guidelines and policy, to deal with issues of international nature, and to provide the technical arm to the MWE. The mandate of the DFS is to provide extension and technical assistance for LFRs and forests on private land, and to collect local forestry revenue. The main function of the NFA is to manage the CFRs, but it is also mandated to provide technical services and products to the forestry sector as a whole.

The *Uganda Forestry Policy (2001)* and the *National Forestry and Tree Planting Act (NFTPA 2003)* provide the policy and legal framework for management of forest resources. The *National Forestry Plan (NFP 2002)* provides the strategy for policy implementation. It is a rolling plan reviewed regularly for the Medium Term Expenditure Framework (MTEF) and budget cycle of the Ministry of Finance, Planning and Economic Development (MFPED).

The NFTPA distinguishes between CFRs, LFRs, community forests, and private forests. The respective responsible bodies for these forest categories are the NFA, local governments (LGs) through DFS, communities, and private forest owners.

The forestry sector's management approach is to be results oriented, focusing on outputs rather than activities. To that end, the NFA is as a semi-autonomous agency with the freedom to operate in a businesslike, self-financing capacity; and the private sector is to take a major role in forestry, particularly in the production and processing of wood products and ecotourism. Nongovernmental organizations (NGOs) and community-based organizations (CBOs) are encouraged to engage in forestry development in terms of building capacity and providing an interface between government and civil society.

⁴² The precursor to the FSSD was the Forestry Inspectorate Division. It was upgraded to a Department of the Ministry in 2006-07.

⁴³ The Ministry of Water, Lands and Environment (MWLE), later became the (current) Ministry of Water and Environment (MWE).

8.5 Performance of the Institutional Structure

The institutional structure created during the 1998–2004 reforms raised hopes of a revitalized and well-managed forest sector, and for a couple of years after the restructuring, performance did improve. But in 2006 the trend reversed and by 2008–09, reports of mismanagement began to appear in the local press. Continued forest cover loss indicated that the forestry development strategy was not being implemented, and allegations of corruption, disregard for the rule of law, and an apparent lack of commitment to SFM pointed to fundamental problems of governance.

Political interference in the management of forestland at both the national and local levels has created an overall poor public image of the forestry sector: “a disgrace to the country” as remarked by the Minister of Water and Environment in 2010. The NFA has lost its credibility, while the FSSD and DFS are hardly visible and exceedingly ineffective. The three institutions did not coordinate their activities, and deviated from their mandates.

To start addressing the situation, the World Bank began working with MWE to identify forestry governance issues in need of reform. A governance workshop in June 2010 undertook a baseline evaluation of forest governance and produced a list of priority areas (MWE and World Bank 2010). Later in the same year, with support from NORAD, the workshop findings fed into a performance assessment of the forestry sector’s institutional structure (LTS International Ltd. 2010).

The overall assessment of the forestry sector’s institutional framework is that it is generally sound—with good policies, laws, institutional roles, and mandates—and that it can be employed to work toward good governance of the sector. Currently, however, there are problems in the framework’s implementation, and forestry governance—the process of decision making as well as the actual decisions that are made—suffers. Box 8.1 summarizes the governance issues identified during the workshop, according to five essential components of forest governance.⁴⁴

The details of the sector’s management deficiencies are discussed in the sections below, but the general reasons for the sector’s problems are: inadequate funding and political interference. Political interference has plagued the sector from the lowest to the uppermost levels of governance, and inadequate and unbalanced funding has handicapped the three forestry institutions—NFA, FSSD, and DFS—from the beginning. The financial support and facilitation that was planned for the FSSD and DFS did not materialize. In contrast, NFA was well funded, and consequently attracted the more dynamic and capable staff, leaving the FSSD and DFS comparatively weaker. The combination of funding and staffing disparities resulted in an extreme imbalance wherein the NFA dominated, while the FSSD and DFS remained weak, unmotivated, and under resourced.

FSSD, NFA, and DFS were designed to operate in a complimentary and programmatic way under the Directorate of Environment Affairs (DEA) with clearly defined functions as per the NFTP Act. But due to the relative capacity imbalances, the institutional linkages between the organizations were weak and the synergies did not develop.

⁴⁴ The five components of forest governance are a diagnostic tool developed by the World Bank.

NFA made strong progress in the early years, but the sector coordination, regulation, support, and oversight functions of the FSSD were lacking, as was the implementation of decentralized functions by the DFS. If all three institutions had been equally equipped with sufficient funding, strong leadership, and institutional capacity, the sector as a whole would have been better equipped to withstand the political interference that came to bear on the NFA, and that is largely responsible for the current debacle in the sector.

Box 8.1 Forest Governance Issues in Uganda	
1.	Transparency, accountability, and public participation
	<p><i>Data availability and accessibility.</i> Sector data are available, but not widely distributed. Few communities informed about ownership, access, and use of forestland rules.</p> <p><i>Public participation.</i> Limited real involvement of communities in forestry decisions.</p> <p><i>Transparency and accountability (T&A).</i> Frameworks exist for T&A, but are not respected and most decisions are politically motivated.</p>
2.	Reliability of forest institutions and conflict management
	<p>There is frequent conflict over forest reserve boundaries and encroachment, and over procedures for timber harvesting, charcoal production, and brick making. Conflicts are often fueled by political interference.</p>
3.	Quality of forest administration
	<p><i>Budgetary support.</i> Activities at both national and local government levels are underfunded and lack technical capacity and sector coordination. Forest-related budgets in related sectors (tourism, energy, agriculture) are often diverted for nonforest purposes.</p> <p><i>Cross-sectoral planning and communication.</i> Mechanisms for this are weak and mostly informal, thereby reducing the transparency of forest management decisions.</p> <p><i>Trust and public image.</i> Lack of trust and a very poor public image hinders adherence to forest laws, commitment to sustainable forestry, and investment in the sector.</p> <p><i>Freedom from political micromanagement.</i> Mostly negative political interference and meddling in the management of protected areas and forest reserves.</p> <p><i>Recording and reporting of management of activities.</i> The National Forest Authority (NFA) and Uganda Wildlife Authority (UWA) keep records, but local governments (LGs) have very poor recording and reporting systems.</p>
4.	Coherence of forest legislation and rule of law
	<p><i>Consistent, clear, and workable forest laws.</i> Less than half of the legal provisions of the forestry law has been implemented, and forest crime continues to increase.</p> <p><i>Fair and effective law enforcement.</i> Private forest owners are distrustful of forest laws and are thus reluctant to abide by them in terms of reporting and development.</p> <p><i>Dealing with forest crime and forest offenders.</i> Cost of access to justice is high and offenders often use political connections to avoid penalty.</p> <p><i>Property rights to be well defined and allocated fairly.</i> Forestland ownership is not always clear due to gazette irregularities or lack of written records.</p> <p><i>Benefit sharing.</i> Revenue sharing is implied in Collaborative Forest Management (CFM), but is not explicit in the forest law, thus hampering the equitability of CFM agreements.</p>
5.	Economic efficiency, equity, and incentives
	<p>Investment incentives in the forest sector favor large-scale investors.</p> <p>The process of granting harvesting licenses and concessions is fraught with corruption.</p> <p>Poor technology and wasteful practices characterize harvesting and construction industries.</p>

Source: Based on MWE and World Bank (2010).

Forest Sector Support Department (FSSD)

As per the NFTP, the FSSD is responsible to the MWE for the regulation and coordination of the forestry sector. The NFP (2002) describes the FSSD's functions and under each it sets objectives and targets. The institutional review found that it had *achieved little progress* in:

- Formulating and overseeing forestry policies, standards, and legislation.
- Providing technical support and monitoring forestry in LGs.

The review further noted that *implementation was weak* in:

- Monitoring the NFA using a performance contract.
- Providing advice, public information, and advocacy to sector stakeholders.
- Ensuring effective NFP coordination and cross-sectoral linkages.
- Mobilizing funds and other resources for the forest sector.

Drawing from the MWE Sector Performance Review FY2009–10, some specific output deficiencies are:

- No community forests registered.
- The NFA performance contract not reviewed and monitored.
- Plantation Action Plans not prepared.
- CFM agreements delayed because FMPs for LFRs not done.
- Forest guidelines and regulations not formulated.

Inadequate funding is a FSSD fundamental constraint that exacerbates all other constraints: organizational capacity is weak, planning is weak, a monitoring and evaluation system is absent, and the department is understaffed. Under existing levels of funds, these other constraints might be alleviated if there were leadership and strategic direction and strict adherence to its mandate as a regulatory and coordinating institution. But inadequate funding demotivates the existing staff and prevents the hiring (or attracting) of people that might be dynamic and capable and motivated to turn the situation around.

Box 8.2 The Farm Income Enhancement and Forest Conservation Project (FIEFOC)

FIEFOC is a Uganda-wide project started in mid-2006 and financed largely by the African Development Bank. The Project is ongoing with a total budget of about \$34 million.

Improving rural livelihoods and food security through sustainable natural resource use and agriculture development is the objective of FIEFOC. Its Forestry Component supports activities for community watershed management and tree planting to revegetate 9,900 hectares of degraded watershed, protect 99,000 hectares of natural forests, and establish 13,500 hectares of plantations. Its Agricultural Enterprise Development Component supports small-scale irrigation, crop development, soil fertility management, agricultural marketing, and apiculture.

FIEFOC covers 37 districts. Its implementation is community based and community driven with significant private sector involvement. Participants contribute labor and resources to achieve sustainable and cost-effective outcomes.

FIEFOC has aided the preparation of Community Action Plans, District Forest Development Plans, and Forest Management Plans (FMPs). The FMPs have been prepared for 506 CFRs, but they await approval.

The Project Coordination is based in the MWE, with Project Support Teams in both the MWE and MAAIF to monitor and supervise project implementation in the districts.

Source: <http://www.afdb.org/en/projects-and-operations/project-portfolio/project/p-ug-aac-001/>.

For now, in the face of scarce funding, most of the FSSD’s work is focused on support to LGs because funds are available for this activity through the FIEFOC project (box 8.2). Its other coordination and regulatory functions are either not implemented or are implemented at low levels because funds are not available for these activities. Moreover, its preoccupation with the FIEFOC project has distracted it from its mandated coordination and regulatory functions, and drawn it into implementation activities.

The FSSD’s *weak organizational capacity* is manifest in poor sector coordination and planning, a lack of prioritization of activities, and gaps and overlaps in implementation of sector activities. The FSSD’s weak performance in implementing its regulatory functions has constrained development of the sector: lack of regulations and subsidiary legislation is delay effective operationalization of the NFTP, inadequate oversight of the NFA contributes to the decline in governance standards, and lack of information on the forest resources constrains effective planning. Table 8.1 summarizes the various capacity deficiencies identified during the performance assessment.

Table 8.1 FSSD Capacity Deficiencies

Planning	<ul style="list-style-type: none"> • No medium-term plan. • No strategy for achieving the goals and objectives. • No strategic leadership or direction. • No clear linkages to NFP. Work plans refer to the ENR-SIP.
Program Management	<ul style="list-style-type: none"> • No monitoring and evaluation system.
Staffing	<ul style="list-style-type: none"> • Staff not clearly aligned with functions and priorities. • Staff does not have clear job descriptions. • Staff skills are not aligned with functions. • Staff lacks complementary expertise in economics, investment, planning, communications, and fund raising.
Revenue	<ul style="list-style-type: none"> • Inadequate for operations. • Staff cannot perform their functions. • Ability to contract services is constrained.
Linkages	<ul style="list-style-type: none"> • Weak. A regulatory and coordinating institution should maintain links and communication with other institutions and stakeholder groups in and outside the sector.
Public Profile	<ul style="list-style-type: none"> • Weak. As a regulatory institution with no public profile and little institutional strength to effectively coordinate the sector.

Source: Based on LTS International Ltd. (2010).

Note: ENR SIP = Environment and Natural Resources Sector Investment Plan; NFP = National Forestry Plan.

National Forestry Authority (NFA)

The NFA was established as a semi-autonomous entity, under the supervision of a Board that reports to the Minister of Water and Environment. Its core function is to manage the CFRs, but it is also mandated to supply other products and services to the forestry sector including technical services, tree seed, geographic information systems (GIS), and other

data. The NFA was provided with the autonomy to enable it to function like a business, managing the CFRs for their productive and ecosystem services functions.

In the early years, revenues from timber sales and other sources exceeded planned levels. The combination of good organizational capacity, a favorable operating environment, and strong organizational motivation provided an excellent basis for good organizational performance. Its effectiveness in implementing its mandate to protect and manage CFRs was reportedly high (2004–05), with good progress made on opening CFR boundaries, recovering encroached land, and establishing plantations in CFRs in partnership with the private sector. It instituted transparent procedures for timber sales and other revenue collection.

Political interference and corruption is NFA's main problem and has contributed to decline in organizational capacity and organizational motivation. Despite the relative autonomy of the NFA and its Board, and the strong legal and policy environment in which it operates, political pressures have seriously undermined its performance. Starting in 2006, allegations of political interference and corruption has caused it to lose its credibility and jeopardize its funding

The political pressures on NFA to excise parts of Mabira and Bugala CFRs for conversion to sugarcane and palm oil production in 2006–07 had a profoundly damaging impact on its organizational capacity, because the entire first term the Board and several senior staff including the Executive Director resigned in protest. The resignations marked a turning point for the organization because the appointment of the second Board did not follow the same rigorous procedures that were followed in appointment of the first. The result was more political motivation and less competence on the second-term Board. The institution was weakened and exposed to political pressures—which exist wherever NFA activities impact on community welfare.

Encroachment into forest reserves for agriculture cultivation is the most contentious issue. Currently there are some 270,000 encroachers in the CFRs. In the initial years (2004–05), the NFA had strong political support to evict encroachers and reestablish CFR boundaries. This contributed greatly to its early successes. Then, in 2006, when 180,000 registered encroachers were cultivating and living in the CFRs, a President Directive—widely perceived as an electioneering tactic—imposed a ban on their eviction. The ban significantly reduced the NFA's ability to implement its primary function of managing and protecting the CFRs.

The NFA's implementation strategies and processes continue to be subject to political whims. Its policy on leasing CFR land originally focused on larger commercial scale forestry companies and investors, but due to external pressures the policy was modified to include smaller-scale local investors. The result was increased management costs. More recently a Presidential Order put a ban on leasing CFR land.

The NFA's law enforcement capability is weak. Unlike the UWA staff, forest guards do not carry arms and are therefore less capable of protecting forest reserves compared to the UWA. Local police are often reluctant to enforce forestry regulations because of the potential danger in confronting illegal operators. (This situation may improve with the recently established Environment Protection Police Force.)

Finances are constraining the NFA's ability to meet projected targets. Revenue from timber sales has started to decline and will continue to do so as remaining mature plantations are cleared. NFA's operating and payroll costs account for 50–70 percent of revenue, leaving a small and declining revenue portion to implement its mandated priority activities.

Apart from declining harvestable timber stocks, the NFA's main constraint is the lack of financial liquidity due to cases of alleged corruption. The NFA funds were frozen (\$2.4 million) due to a court order imposed in late 2009, when a lessee sued the NFA over a retraction of a lease of CFR land in Entebbe. The NFA operations were consequently paralyzed.

The organizational weakness in the FSSD undermines the NFA performance. While the FSSD is supposed to ensure that the NFA activities match government policy and priorities, the NFA's performance contracts with the FSSD are not monitored, reviewed, or delivered on time. In the absence of the FSSD fulfilling this part of its mandate, the NFA has been setting its own priorities leading to an undue focus on revenue generation, at the expense of its mandate to also protect the public good.

Political pressures in support of encroachment and conversion of forest to other uses are an indication that economic arguments in support of forestry are not as convincing or as well understood as the arguments in favor of conversion to other uses. As per the NFP, the FSSD is responsible for "*promotion, public information and advocacy for the forestry sector.*" But it has not collaborated with the NFA (or DFS) to develop and disseminate economic arguments supporting forest management. The recent return of the Mabira Forest Reserve controversy to the public spotlight (box 8.3) indicates that collaboration and coherence in implementing the forestry sector strategy is still wanting.

District Forest Services (DFS)

The 1998–2004 reforms decentralized to District LGs responsibility for all forests other than those managed by the NFA and UWA. When private forests and other unreserved forests were included, this amounted to 70 percent of the forest resources in Uganda in 1993; however, these resources have been steadily declining since then.

The NFTP describes the functions of the DFS as: managing LFRs and private and customary forests, collecting revenue, providing advisory services on community forestry and tree planting in general, promoting tree planting and on-farm forestry, and advising the District Councils on all matters relating to forestry in the district.

LFRs are small and fragmented. Almost all are degraded and in total amount to approximately 5,000 hectares. Good quality, up-to-date information is lacking but available data suggest that most destruction and degradation of forests in the country is occurring in

Box 8.3 Mabira Central Forest Reserve—Back in the News, August 2011

Mabira Central Forest Reserve is 50 kilometers from Kampala. It was threatened with degazettement in 2007 for conversion to sugarcane production. Violent public protests (and economic valuation of ecosystem services) eventually carried the day and it was left intact. In mid-2011, facing rising food prices, the President started again to call for its conversion to sugarcane, and again Ugandans protested the lack of public participation and transparency for such a decision. Moreover, they protested the potential violation of the Ugandan Constitution.

Source: Various media articles and statements by civil society organizations (CSOs).

the forests on private land. The DFS has made no progress in improving protection and management of LFRs, and there is no legal mechanism at present for controlling destruction of forests on private land.

Over 50 (out of the 112+) districts have been carrying out village-level tree planting through the support of the FIEFOC project and FSSD, which focuses on those districts with the lowest levels of forest resources. This is also an example of the FSSD involving itself in implementation activities that are not part of its mandate, but rather part of the DFS' mandate.

The main focus of DFS's day-to-day work is on collecting revenue for timber movement permits, charcoal production, tree felling, and so on. This is generally driven by LG administrations that are chronically short of funds and expect the DFS to generate some revenue to support LG administration costs. Other functions of the DFS are thus neglected.

The DFS suffers from inadequate capacity. There is considerable variation between districts but overall performance of the DFS in achieving its goals and implementing its mandate is very weak. It was expected to function with support from the FSSD and NFA, but that has been lacking. Linkages with the NFA are weak and relationships are characterized by mutual distrust and suspicion, highlighting again the FSSD's failure to facilitate coordination between the NFA and DFS.

Inadequate funding is a major constraint to the DFS's performance. Within the LG administration, forestry is a low priority compared to other sectors. Consequently, budgets allocated to forestry are low. Forestry staff positions are unfilled and basic equipment and materials are lacking. The designated DFS's staff in each district is supposed to be two to three technical people, but many recently created districts do not have technical forestry staff, and it is difficult to recruit staff at the low salary rates offered by LGs.

The low priority status of forestry in LGs is demoralizing. DFS staff are subject to local political and administrative pressures to allow encroachment and clearance of forest. Consequently, restoration of degraded LFRs or protection of forests on private lands is often not practical. Locally, foresters are perceived as working against the interests of the population by protecting forests.

At the district level, not much has changed since 2001 when the National Forestry Policy was formulated. At the time it was noted that LGs lacked capacity and political commitment, that forest revenue was not reinvested in the sector, and that forest management plans were rarely integrated with District Development Plans (DDPs). There are now more completed FMPs, but the requisite capacity, commitment, and reinvestment to implement those plans remain steadfast constraints.

8.6 Communities in Forest Management

Collaborative Forest Management (CFM)

In the 2004–06 period, the forestry subsector performance review noted that CFM had taken root and that local communities were increasingly participating and benefiting from the management of public forest reserves. To date, however, there are only 10 signed CFM agreements in natural forests and 2 signed in plantation forests. There are 11 draft CFM agreements under review, and 33 CFM initiatives for which negotiations have been

initiated. The 2009–10 FSSD target was to have 81 CFM agreements signed. None were, because LFR Management Plans (FMPs) were not ready. FMPs have been prepared for all 506 CFRs, but are awaiting Ministerial approval.

The small number of CFM agreements indicate that uptake is slow (2 percent of total area under the forest reserve system), despite expressed interest. The problem is not only due to administrative bottlenecks such as the absence of approved FMPs, but also because the negotiation process tends to be lengthy, and the quality of public participation is questionable. Generally, it can take 2 or more years to finalize a CFM agreement. Even when they are finalized, it is reportedly common that the community does not understand it because it is written in English legal terminology. Another significant dissuading issue for communities relates to benefit sharing. There are no guidelines as to what benefits from the sale of forest products and services will accrue to the community. Communities can find themselves sharing the least valuable forest products.

Communal Forests

Customary land tenure is the major form of land tenure ownership in Uganda. Forests and woodlands on such land are open access, with little incentive for individual investment in sustainable forestry practices. Profits from communal woodlands are low and it is highly beneficial to convert them to private tenure and agriculture.

Forests and woodlands on land under customary tenure can be legally obtained for management as a community common property resource. The approval of an application by the local Communal Land Association (CLA) grants the CLA the tree and carbon tenure rights to the land. As of early 2011, only two community groups have completed the application process—and neither has been approved. Hence, community rights to forest products are not legally defensible.

8.7 Funding the Forestry Sector

As discussed in chapter 4, the Government of Uganda's budget funding to the Environment and Natural Resources (ENR) subsector of the MWE amounted to \$16 million in FY2009–10, representing 0.5 percent of total government spending. Of that \$16 million, about \$12.5 million went into the forestry sector, managed by central bodies: the FSSD or NFA. Nearly 60 percent of that amount was provided by the Development Partners (DPs) through various projects: the FIEFOC, SPGS, Environmental Management Capacity Building Project II (EMCBPII), and REDD. The NFA, while receiving both the Government of Uganda and DP support, also generates its own (off-budget) revenue to cover a large part of its activities.

Table 8.2 shows the funding available to the FSSD and NFA from the various sources for the FY2009–10. These figures are the payments that were made to the respective bodies. The budgeted figures (not shown) were considerably greater: the FSSD was originally budgeted to receive \$20.1 million; NFA, \$13.6 million.

Nontax revenue from plantations and forest products provides most of the funding for the NFA, which had \$ 8.15 million in available finances. But \$2.4 million (US\$4.8 billion) of that

was frozen by the donor in FY2009–10, in response to allegations of unlawful contracting behavior.⁴⁵ By far the bulk of the FSSD funding has been coming from the FIEFOC project.

The NFA needs to secure its finance. Since established, its funding has been a combination of donor funds, government subvention, and revenue from commercial activities—mainly plantation timber sales.

Table 8.2 Forestry Sector Finances

Source of funding	FY 2009–10 ^a	
	\$ million ^b	
FSSD		\$ 9.92
Government of Uganda	0.71	
FIEFOC	9.21	
NFA		\$ 8.15
Government of Uganda	0.57	
DP (SPGS, EMCBP II, REDD)	1.99	
Revenue (plantations and forest products)	5.59	
Total		\$ 18.07

Source: MWE 2010c.

Note: ^a Payments received which in all cases are lower than the budgeted amounts; ^b Exchange rate: \$/US\$ 2,025. DP = Development Partner; FIEFOC = Farm Income Enhancement and Forest Conservation Project; FSSD = Forestry Sector Support Department; Environmental Management Capacity Building Project II (EMCBP II); NFA = National Forest Authority; REDD = Reducing Emissions from Deforestation and Forest Degradation; SPGS = Sawlog Production Grant Scheme.

Over the 4-year period 2004–05 to 2008–09, the relative contributions of these funding sources changed: donor funding declined from US\$ 6.6 billion to US\$2.9 billion, the Government of Uganda funding never met its planned contribution levels, and revenue from timber sales jumped from US\$5.5 billion to US\$13.2 billion, accounting for 72 percent of the NFA's total revenue in FY2008–09. Revenues from timber sales were above targets, but this resource is now almost exhausted.

There are now only about 1,000 hectares of mature and semi-mature timber in the NFA's plantations. The age distribution of the plantation stock is such that there will be very little revenue from the NFA plantations for at least another decade. Consequently, the NFA will need to rely on public or donor funds over the next decade to continue its operations of plantation investment and maintenance.

8.8 Recommendations to Improving Performance of the Forestry Sector

The diagnostic research into forest governance⁴⁶ made specific recommendations for improving the functioning of the FSSD, NFA, and DFS. These recommendations are summarized in tables 8.3 to 8.5.

⁴⁵ The funds remain frozen at the time of writing.

⁴⁶ Requested by the MWE and supported, at different stages, by both the World Bank and Norway.

Improve Governance to Enable Investment

Improving governance—the process of decision making as well as the decisions taken—will improve the performance of the forestry sector. The NFA is the most prominent of the three forestry institutions, and it has the worst public image. It is therefore critical to reestablish the credibility the NFA, and insulate it from political interference. Collaboration among the FSSD, NFA, and DFS is fundamental. For the FSSD, increasing funding and improving its operational capacity is imperative if it is to fulfill its mandate as the sector’s coordination and regulatory body. The DFS needs a lot of support from the FSSD, in addition to increased, sustained, and predictable funding.

Turning the sector around requires financial investment in sustainable forestry. But, investment—be it from DPs or the private sector—requires a predictable investment climate, and irregularities resulting from political interference and corruption drive it away. Norway, for example, has collaborated with Uganda in the forestry sector for many years, but it withdrew support in 2010 because of management irregularities at the NFA. It subsequently stated that it “recommits itself to the forest sector, only when an acceptable level of governance is reestablished in the key forest sector institutions.”⁴⁷

The private sector is key to forestry development in Uganda. Its investment in plantations has increased in recent years. To sustain that momentum and to encourage communities and private forest owners to invest in forestry projects, an enabling investment environment needs to be created. Issues of unclear land tenure arrangements, unclear boundaries, inconsistent enforcement of laws, market disincentives for investment, and quality control of products, all need resolution—if private investment is to be encouraged.

Improve Governance with Transparency

The number one recommendation coming from both the expert workshop on forestry governance (Kampala, June 2010) and the subsequent sector review was to increase transparency. Transparency improves accountability and reduces the opportunities for corruption. It means making comprehensive information available to the public on forest resources and their management. It is recommended that information on public forests and the operations of the NFA and DFS be made freely available and readily accessible. Such information would include GIS maps, inventories, felling plans, long-term plans and harvesting forecasts, financial information and reports, tender and concession allocations, and any other information required by the public. Information is also required on forests on private land including natural forests and plantations; however, acquiring information on private holdings will require the restoration of the public trust in the nation’s forestry institutions. Currently private forestland holders are reluctant to volunteer information.

Civil society organizations (CSOs) that focus on governance and forestry have an important role in holding public institutions and individuals accountable. The Forest Governance Learning Group and Advocates Coalition for Development and Environment (ACODE) are key players in this regard. Transparency with timely and reliable information facilitates efforts of these types of players to improve governance in the sector.

⁴⁷ First Secretary, Norwegian Embassy, Workshop on Governance, Kampala, June 2010.

Engage Communities in Forest Management

Local communities are on the front lines of forestry development and need to be involved in decisions that affect them. Uganda's policy and legal frameworks provide for stakeholder participation, but mechanisms are inadequate to enable people affected by forest decisions to influence those decisions. To make public participation in forest management and administration meaningful, levels of involvement in the decision-making process need to be stipulated. The engagement of the CBOs that focus on forest governance and management needs to be facilitated.

Administrative bottlenecks and disincentives that thwart initiatives for community stewardship of local forest resources need to be identified and remedied. It is important that communities are mobilized and incentivized to engage in SFM activities. Communal forests, wherein the rights of ownership over trees and carbon are legally defensible, increase the value to local communities of forest resources on customarily held land. Therefore, measures to facilitate their development should be identified and implemented. Similarly, CFM on forest reserves needs to be facilitated. Stumbling blocks to achieving CFM agreements, such as the lack of forest management plans and benefit sharing rules, need to be identified and eliminated.

Encourage the Private Sector

PPPs in forest reserves should be further developed in both CFRs and LFRs. Lessons learned from successful programs such as the SPGS should be built upon. On privately held forestland, where most deforestation is occurring, resource use rights should be clarified. Rights to carbon, for example, need clarification to operationalize REDD+ incentives. The Payment for Ecosystem Service (PES) may also be feasible in situations where benefactors of forest ecosystem services are identifiable. Private sector investment projects for the International Finance Corporation (IFC) should be pursued. The feasibility of all of these avenues for private sector engagement is contingent upon improved governance in the sector. Private investors need to be assured a predictable investment climate, characteristic of good forestry governance.

Establish Conflict Resolution Mechanisms

Persistent conflicts between forest managers and forest users need to be resolved. Improved transparency and information availability, and the consistent application of forestry policy and law, is a necessary first step. Conflict arises, for example, when forest laws are enforced arbitrarily, political signals are contradictory, contracts are breached, or land tenure rights are insecure. Forestry sector institutions need to develop guidelines to help managers resolve conflicts, and provide conflict resolution capacity at local levels.

Improve Governance Capacity of the FSSD

Given that the FSSD is responsible for the sector's regulation and coordination, it needs to be strengthened. This is the resounding conclusion of all the forestry governance diagnostic work. Furthermore, according to Uganda's REDD+ R-PP, the FSSD will be the Focal Point for development of the country's REDD+ Strategy. As such, the FSSD capacity will be strengthened prior to and during the R-PP implementation. Table 8.3 lists specific recommendations to improve the FSSD's governance capacity. They fall into essentially

three categories that include restructuring its own management, securing its funding, and strengthening coordination among all actors in the sector.

A preliminary task in the REDD R-PP is a capacity needs assessment to identify FSSD's critical capacity constraints. Lessening these as soon as possible will allow it the means to start tackling its mandates. Importantly this includes the coordination of the NFA, DFS, and other actors in the sector; strategies to increase transparency and reduce the sector's vulnerability to political interference; reinstilling confidence in the sector's institutions; and building public awareness about the potential value forestry to local communities.

Table 8.3 FSSD: Recommendations to Improve Operations

Improve management	<ul style="list-style-type: none"> • Develop strategic plan. • Review organizational structure to facilitate the plan. • Match staff capacities with functional requirements. • Develop M&E system. • Employ good program management to ensure staff are motivated and on track to implement planned priorities. • Adhere to mandate of coordination and regulation.
Secure funding	<ul style="list-style-type: none"> • Clarify funding requirements in strategic planning process. • Seek funding from other actors in the sector for activities falling outside of core responsibilities of coordination and regulation. Technical support to LGs or advocacy activities to be provided through mechanisms such as FIEFOC or SPGS.
Strengthen coordination	<ul style="list-style-type: none"> • Improve coordination with all actors in the sector: the NFA, DFS, CBOs, NGOs, universities, training institutes, other ministries and agencies—all who impact the forest and its stakeholders. • Improve coordination of support from the donor community. • Assist the NFA and DFS in revitalizing their operations and improving their public image, raise awareness of forests, work to lift management constraints that disable the NFA and DFS.

Source: Based on LTS International Ltd. (2010).

Note: CBOs = community-based organizations; DFS = District Forestry Services; FIEFOC = Farm Income Enhancement and Forest Conservation Project; FSSD = Forestry Sector Support Department; LGs = local governments; M&E = monitoring and evaluation; NFA = National Forest Authority; NGOs = nongovernmental organizations; SPGS = Sawlog Production Grant Scheme.

Provide the DFS the Means for Forest Governance

The management of the bulk of forest reserves is decentralized. Yet, the DFS has not been effectively operationalized. The low priority status of forestry within the LG system results in small budgets, low salaries, inadequate staff, limited competence, and low morals—compounded by inadequate FSSD support and local political pressures to allow encroachment and unsustainable harvesting. The DFS needs empowerment through secure funding, over which it has control. It needs capacity building and training through technical support from the FSSD, NFA; and closer collaboration with FIEFOC and SPGS for its community forest activities. It needs the means to develop and implement strategies to manage LFRs and provide extension services to private forestland. Table 8.4 summarizes recommendations to improve the DFS capacity for forest governance.

Conditional grants for the DFS has been cited repeatedly as a means to secure local funding. More DFS control over FIEFOC project funds has also been proposed. Another possibility lies in the REDD program. LGs are part of the REDD-Plus Steering Committee and their staff participated in the formulation of the REDD+ R-PP.

Raising awareness at the local level is critical as described in section II, local councils request funding based on their priorities. Forestry (and environment in general) has not been a priority for which LGs clamor for funds, or for which they allocate their scarce revenues. In large part this is because the DFS lacks the capacity to manage forest resources, to analyze and communicate to community members the implications of local management decisions. To raise awareness about forests—policies, laws, potential benefits, and development trade-offs—the DFS needs the means to collaborate with other forest sector actors including the FSSD, NFA, UWA, NGOs, and CBOs.

Table 8.4 DFS: Recommendations to Improve Operations

Enhance capacity	<ul style="list-style-type: none"> • Improve pay and incentives for district public sector. • Increase staff; start by filling unfilled positions. • Improve the DFS technical, financial, and administrative capacity by increasing its control of the FIEFOC project implementation, and reducing that of the FSSD.
Secure finance	<ul style="list-style-type: none"> • Provide conditional grants for district forestry instead of relying on LGs to allocate funding for forestry activities. • Channel community tree planting funds through the DFS, thereby building capacity and ensuring funds reach intended beneficiaries.
Provide technical support	<ul style="list-style-type: none"> • Improve the FSSD’s provision of technical support to the DFS. • Establish a DFS unit in the FSSD to coordinate support delivery with the NFA. • Provide technical support regionally to clusters of districts through the FSSD performance contracts with the NFA.
Address private forest destruction	<ul style="list-style-type: none"> • Led by the FSSD, develop strategy to gather information on scale of forest clearance on private lands. • Led by the FSSD, coordinate with the NFA to generate information.
Improve LFR management	<ul style="list-style-type: none"> • The DFS/FSSD collaboration to develop strategy to manage the LFRs, including a template for the LFR management plans. • Collect information on all the LFRs: current condition, use, and practicality of rehabilitation. • Prescribe management regimes or other options as appropriate given the circumstances of each LFR. • With assistance from the FSSD and NFS implement systems of community involvement in management planning for LFRs.
Improve forestry extension service	<ul style="list-style-type: none"> • The DFS/FSSD collaboration to reexamine the strategy of forestry extension service delivery through NAADS, which is biased toward demand-driven services for agriculture and livestock. • Use lessons learned from the FIEFOC and SPGS extension programs for village tree planting and commercial forest plantations.

Source: Based on LTS International Ltd. (2010).

Note: DFS = District Forestry Services; FIEFOC = Farm Income Enhancement and Forest Conservation Project; FSSD = Forestry Sector Support Department; LFR = local forest reserves; LGs = local governments; NAADS = National Agriculture Advisory Services; NFA = National Forestry Authority; SPGS = Sawlog Production Grant Scheme.

Restore Governance Credibility to NFA

Given the allegations of corruption and management irregularities over the past few years, the NFA needs to find a way to manage the political pressures that come with realizing its mandate. To begin this process, the fundamental requirement is an unequivocal political commitment to appoint a strong, competent Board and executive director dedicated to improving forest governance.

With that fundamental commitment obtained, the NFA is better positioned to seek donor assistance to revitalize itself, and to engage the private sector. It needs to reexamine its priorities, address financial issues by exploring innovative financing options, improve linkages with FSSD and DFS, address political pressures in the sector, and improve its public image. Specific recommendations for the NFA are summarized in table 8.5.

Evaluate Financing Options for NFA

The NFA's current business plan shows a deficit. If the NFA reduces its role in plantations and focuses on its public good functions, more funding for operations needs to come from government. Even if the NFA does not let go of its plantations, it will need increased funding due to the reduced levels of plantation revenue for the next decade.

The NFA needs to develop creative and innovative financing strategies to access these funds. Also, importantly it needs to evaluate the efficiency of its current set of economic instruments in capturing the forest economic rent associated with harvesting rates.

➤ Forest Land Rental Income

The NFA leases CFR land to private investors through its PPPs. This generates an annual stream of funds that is predictable, easy to monitor, and difficult to misappropriate. As the areas leased are quite large (149,000 hectares to date), the annual lease income is significant even though the amount per hectares may be small (currently US\$10,000 per ha/yr). If the NFA's plantation activity were divested to the private sector land rent income would increase accordingly, and there would also be revenue from the sale or lease of its established plantations. In either case, the leasing policy should be evaluated for its economic efficiency in capturing the economic rent from forestland.

➤ Carbon Financing

Carbon credits provide a potential funding opportunity for the NFA, if carbon stock in CFRs can be increased through protection or enrichment planting. NFA could also consider retaining the rights to claim credits on new private plantations established in the CFRs (or to share in the value of the credits). This issue should be coordinated by the FSSD, as it has sector wide implications and it would form part of the country's REDD+ Strategy.

➤ **Public-Private Partnerships with the IFC**

Another potential source of innovative financing for PPPs is through the IFC. IFC invests in forest-based sequestration projects, as stand-alone plantations or in association with downstream wood product manufacturing. The goal of its *cleaner production* strategy is to increase input efficiency and minimize waste and pollution at source. IFC's Tanzania-based Green Resources project (box 8.4) is a potential model for innovative investment in Uganda's forestry sector.

Box 8.4 The International Finance Corporation (IFC) Investment in African Forestry

IFC is providing \$18 million of long-term financing and \$200,000 in grant funding to Green Resources, a plantation, carbon offset, forest products, and renewable energy company. The company will expand and modernize its sawmill operations in Sao Hill, Tanzania, and establish plantations in Tanzania, Uganda, and Mozambique. The company plans to obtain Forest Stewardship Council certification for all its plantations. It is building a 15 MW heat and power plant fueled by recycled wood waste from its sawmills. Carbon offset revenues (from both the plantations and bio-energy generation) are to be reinvested in the countries where they were generated, with 10 percent being used for community developments.

Source: http://www.ifc.org/ifcext/spiwebsite1.nsf/ProjectDisplay/SPI_DP26506

➤ **Payments for Ecosystem Services (PES)**

PES is increasingly being used as a means to address natural resource issues through mechanisms, wherein the benefactors of ecosystem services compensate those who provide them. Ecosystem services of forests such as water supply and soil stabilization benefit downstream populations. Uganda may be able reduce pressure on its forest estate and/or provide financing for its maintenance through the development of PES arrangements. PES as a means of conservation financing is being employed in countries such as Columbia, Costa Rica, and Venezuela. The basic requirement is the identification of the population that is benefiting from a particular forested area, and the de facto stewards of that area. The willingness to pay (WTP) of the benefactors can then be translated into a financial transfer to those (the NFA, LGs) to maintain the integrity of the forest.

➤ **Private Sector versus Public Sector Plantations**

The private sector is actively investing in plantations. Between 2002 and 2008, private sector investment increased (through funding from domestic sources) from US\$5.8 billion to US\$19.6 billion. Currently, the overall target for plantation area is 200,000 hectares: 150,000 for the private sector, 50,000 for the NFA. The success of private sector investment in plantations is due in large part to the NFA policy of leasing degraded CFR areas to investors. Both small and large investors are involved. The SPGS has facilitated the smaller investors through technical advice, training, advocacy, and inputs.

The efficiency of the NFA's own plantation investment is questionable given increasing investment of the private sector. There is a strong case for leaving commercial plantation development entirely to private forestry companies. The benefits to the economy are the same whether plantations are public or private, but they are greater if production is more financially efficient and quality is higher. Standards in commercial-scale private plantations are generally high because it makes economic sense to maximize efficiency as well as

complying with SFM standards to achieve certification. The NFA will struggle to compete with the *commercial- scale* forestry companies in terms of efficiency and standards.

The roles of NFA and FSSD should be to provide an enabling and regulatory environment that protects the public good by ensuring commercial forestry investors follow criteria and principles governing SFM. The NFA and FSSD working together would create confidence in the forest industry and its products.

Table 8.5 NFA: Recommendations to Improve Operations

Appoint strong and dedicated Board and Executive Director	<ul style="list-style-type: none"> • Adhere to the 2003 Act when appointing Board, selecting: “persons of high moral character and proven integrity.” • Adhere to a selection process such as the NFA Corporate Governance Initiative that successfully yielded the first Board. • Based selection on merit. • Keep selection process transparent; scrutinize selection by Technical Panel with independent membership. • Technical Panel members are experts from both government and the business sector. • Executive Director selection assisted by the Board Chairperson, the DEA Commissioner, and an independent assessor nominated by the Institute for Corporate Governance in Uganda.
Revitalize operational structure	<ul style="list-style-type: none"> • Reexamine the NFA priorities and strategies—with participation of the FSSD who sets parameters for the NFA’s operations. • Revise the business plan in cooperation with the FSSD for an appropriate mix of income-generating and public good activities that is in line with the NFP and NDP. • Address long-term financing issues. • Reorganize, recruit, and realign senior staff as necessary.
Address political pressure	<ul style="list-style-type: none"> • Work with the FSSD to convince the public of the case for forestry to gain political support for sustainable forest management. • Work with the FSSD to overcome management constraints such as the ban on eviction and additional leasing of the CFR.
Develop strategy for self-finance	<ul style="list-style-type: none"> • Reassess role in plantation development; consider more reliance on private sector and more focus on public function as forest manager. • Reduce operational costs through revision of the leasing policy. • Reduce operational costs through management arrangements with the UWA and communities, especially in cases of small, remote CFRs. • Investigate financing possibilities such as carbon credits, and ecosystem service payments.
Linkages	<ul style="list-style-type: none"> • Work with the FSSD and DFS to overcome political interference issues and to raise awareness of the role of forests in resource management decisions. • Work with the FSSD to enforce standards to increase investor and consumer confidence in the forestry industry and its products.
Reorganize NTSC and NBU	<ul style="list-style-type: none"> • Restore credibility to the NTSC as a quality seed provider and consider moving it out of the plantations division of the NFA. • Review the NBU’s role and make it more responsive to sector needs.
Public profile	<ul style="list-style-type: none"> • Work with the FSSD—who is responsible for “promotion, public information and advocacy of the forestry sector” (NFP)—to improve the public image of forestry institutions.

Source: Based on LTS International Ltd. (2010).

Note: DFS = District Forestry Services; DEA = Directorate of Environment Affairs; CFR = Central Forest Reserve; FSSD = Forestry Sector Support Department; NDP = National Development Plan; NFA = National Forestry Authority; NFP = National Forestry Plan; NTSC = National Tree Seed Centre.

Chapter 9. Wetlands

Main Messages

- *Data and information about wetland boundaries, uses, and functions are lacking.*
- *The demarcation strategy is needed, but its implementation will be complex.*
- *Wetland legislation is needed to define roles and responsibilities of wetland authorities.*
- *Inadequate financing constrains institutional capacity and jeopardizes the success of Community-Based Wetland Management Planning (CBWMP) processes.*
- *Political interference is a major constraint to wetland management efforts.*
- *Innovative financing mechanisms such as Payment for Ecosystem Services (PES) should be pursued.*

The most recent estimate of wetland area in Uganda is around 26,000 square kilometers (km²), or 11 percent of the total area of the country.⁴⁸ Wetland areas are seasonally flooded grasslands (almost half of total wetlands), woodland forests, permanently flooded grass swamps, and upland bogs. They lie in varying altitudes from 1,134 meters above sea level at Lake Victoria, to as high at 4,000 meters in the Afromontane regions of Mt. Elgon and the Rwenzori mountain range.

Wetlands are found in almost every sub-county of Uganda. Most individual wetlands are linked to other wetlands through a complex network of permanent and seasonal streams, rivers, and lakes, making them an essential part of the entire drainage system in Uganda (WWAP and DWD 2005).

Uganda has been an African leader in the wetland conservation. It joined the Ramsar Convention in 1988 and currently has 12 designated Ramsar Wetlands of International Importance, totaling 4,543 km². Uganda's first designated site was 15,000 hectares on Lake George, and spread over the three districts of Bushenyi, Kasese, and Kamwenge. The most recent site added to Uganda's Ramsar list is 99,500 hectares in the Rwenzori mountain range, and spread over the three districts of Kasese, Kabarole, and Bundibugyo.

The dispersal of wetlands around the country means that many people benefit from their ecosystem goods and services. But the greater the access, the greater are the opportunities for degradation, particularly because of the interconnectedness of wetlands and water bodies: degradation in one area, impacts upstream and downstream users in other areas. Moreover, the fact that wetlands cross local government jurisdictions compounds the challenge of achieving concerted and integrated wetland management.

Wetlands outside the Ramsar sites are under severe pressure from population growth, and the tendency of people—poor and rich—to benefit from what is perceived as free land. Wetland importance is generally associated with direct consumptive uses only: crop cultivation, sand and clay extraction, wood fuel, and land for urban development or waste disposal. Threats come not only from the poor trying to derive livelihoods. They have also come from the more affluent farmers who have drained large tracts of wetlands for commercial operations such as dairy or rice farming. In urban areas, wetlands are targets for industrial developments, or unplanned human settlements.

⁴⁸ National Biomass Study Unit of the National Forest Authority (2008).

Vital wetland ecosystem services—water purification and waste treatment, water storage, and water regulation (groundwater recharge, flood attenuation)—are often overlooked. But evidence from across the country is revealing the linkages between wetlands and water: water supply shortages are occurring in reclaimed wetland areas, flood impacts have been catastrophic in areas where wetlands once provided an absorptive buffer against heavy rains, water bodies and infrastructure are suffering from siltation and pollution in areas where wetlands once retained soil and nutrients, and urban areas have felt the cost of replacing the waste water purification function of local wetlands. Moreover, the poor become poorer because they are most dependent on the resource, so they suffer the consequences of its degradation that includes increased water costs, and increased vulnerability when flooding washes away a season's worth of crops.

9.1 Institutional Background Summary

Prior to 1988 when Uganda acceded to the Ramsar Convention, wetlands had essentially no protection. Up until then, British law imported into Uganda in 1902 vested “wastelands” in the Crown since Uganda was a British protectorate. The only interest in the “wastelands” by the British Crown and the successive Government of Uganda related to their water resources, which would be *reserved to the Government*. Wetlands could not be owned, and with the exception of water, extraction of wetland materials was uncontrolled.

In response to the negative consequences of wetland reclamation in southwestern Uganda, large-scale wetland drainage was banned in 1986. In 1988 with the Ramsar Convention, Uganda agreed to protect wetlands in its legislation. In 1989 the National Wetlands Conservation and Management Programme (NWP) was established to develop a wetlands policy. In 1995 the new Constitution provided all natural resources including wetlands with State protection; it also enshrined the doctrine of public trust, wherein the Government (or a local government) holds certain public resources in trust for the people. Wetlands are a public resource held in trust. The National Environment Act (NEA 1995), developed at the same time as the Constitution, and the National Environment (Wetlands, River Banks, and Lake Shores Management) Regulations developed in 2000, contain specific provisions for wetland protection.

In 1995 the National Policy for the Conservation and Management of Wetland Resources was adopted, and the Wetlands Inspection Division (WID) was established in the Ministry of Water and Environment (MWE). In 2006 the WID was elevated to the Wetlands Management Department (WMD) and it remains the national authority for wetland policy formation and implementation.

The wetlands information and experience gained in the course of the NWP led to the formation of the first Wetland Sector Strategic Plan (WSSP) 2001–10. A main objective of the Plan is to increase incomes and quality of life for the poor. The dependence of the poor on wetlands was recognized in the Poverty Eradication Action Plan (PEAP), which justified allocation of funding from the country's Poverty Alleviation Fund (PAF) to wetland initiatives. Given that wetland management is a decentralized function of local government, the first WSSP included capacity building at local levels.

Given the pressure on wetlands for subsistence agriculture and income, the WSSP seeks to harmonize its policies and actions with those of the Ministry of Agriculture, Animal

Husbandry, and Fisheries (MAAIF). The goal is to promote productive and wise use, ideally compatible with the maintenance of vital wetlands ecosystem functions.

The WMD is currently in the processes of finalizing its second WSSP 2010–20.

9.2 Wetland Ownership Issues

The Land Act reiterates the Constitution in that wetlands are a public resource held in trust by the government—local and central—for the people. As such, wetlands cannot be leased, and the issuance of a land title with respect to wetlands (or within regulated lakeshores and riverbank zones) is illegal. But limited awareness about the legal provisions of the Land Act prompts local communities and individuals to assume ownership of wetland areas.

At the community level, many wetlands are treated as common property areas, set aside for edge cultivation, fishing, grazing, and harvesting of natural products. Wetland products are not of equal interest to all people living nearby. In a given wetland section, people may specialize in extracting one product or another. Specialization is also linked to a demographic like gender or age: papyrus harvesting and brick making are predominantly carried out by young men; harvesting of palm leaves and weaving them into mats mainly by women.

Community regulations for use of permanent wetlands and grazing areas stipulate free access and user rights for all community members. But some individual dairy farmers in the southwest have obtained exclusive rights to reclaimed wetlands for terms of up to 99 years.

In many of the seasonal wetland valley bottoms in the east, families obtained exclusive rights from the community or clan some generations ago. Here, exclusivity was asserted when rice cultivation increased the value of the land, prompting the original owners to turn “their” valley bottoms into rice fields, or lease them to rice cultivators. Farmers and pastoralists with no user rights to valley bottoms then lost their access to seasonal grazing areas, which has led to tension and some conflict between rice cultivators and pastoralists.

Some wetlands fall within larger titled property. In these cases, although landowners own the surrounding land, they do not own the wetlands, and the law and regulation stipulates that they have a duty to prevent its degradation or destruction. But implicated landowners (Mailo land owners in the Buganda Region; large-scale dairy farmers in Bushenyi and Kabale Districts) want compensation for changing their land use, which is difficult for the Government to accommodate.

9.3 Wetland Data

There are serious knowledge gaps in wetlands. There are no recent, exact countrywide statistics on wetland area: the location and extent of specific wetlands is based on a 1996 land cover map (NFA 1996). Recent estimates of wetland coverage range from 26,000 to 35,000 km²: somewhere between 11 percent and 15 percent of the country’s total surface area. Consequently, there are no countywide data on the changes in wetland area, only some district- or wetland-specific accounts of wetland loss, and a general consensus that the country’s area under wetlands is continually reducing.

Inadequate information about wetland areas is linked to the fact that there are no legally defined boundaries for wetlands in Uganda. Moreover, determining boundaries for wetlands is complicated by their seasonality: seasonal wetlands expand and contract with precipitation levels. These two factors increase the vulnerability of wetlands to encroachment.

A National Wetland Information System (NWIS) is maintained by the WMD. It is an inventory of different wetland uses, their level of use, and the impact of these uses on wetland systems. The data, collected between 1997 and 2001, pertain primarily to wetland products: water, fiber, fuel wood, and so on. Information about the regulating services of wetlands—erosion control, fish breeding, floodwater protection—is limited. Furthermore, the NWIS has not been completed, some districts, particularly in the north, but also some eastern and central districts, have not been surveyed. According to the National Environmental Regulations,⁴⁹ the WMD is required to “*publish the inventory of wetlands every five years to reflect the current state of wetlands in the inventory.*”

The NWIS needs to be completed, updated, expanded, and checked for consistency; data already entered need updating. Information on wetland services needs to be gathered and the consistency of the qualitative measures to judge use impacts and wetland health needs to be checked. Wetland data for the yet-to-be-surveyed districts need to be entered into the NWIS. Finally, there are no clear linkages between the NWIS database and wetland databases at the National Forestry Authority (NFA), NEMA, or the Land Information System in the Ministry of Lands, Housing and Urban Development (MLHUD).

9.4 Demarcation Strategy

Sanctioned by the Joint Sector Reviews (JSR 2009, 2010), the WMD is collaborating with the NFA to finalize and implement a Strategy for Boundary Demarcation for Forests and Wetlands. As part of this initiative, wetlands will be gazetted. The impetus for the Strategy is that the loss and degradation of wetlands (and forests) in Uganda is partly attributed to unclear boundaries. By the end of 2010, the Strategy was drafted and is now awaiting implementation.

In the absence of legally defined wetland boundaries, wetlands cannot be gazetted for protection and boundary definition cannot be straightforward. Wetland definitions provided in the Wetland Policy (1995) and the Environment Regulations (2000) refer to temporarily, seasonally, or permanently flooded areas of shallow water with particular soil, plants, and animals. The definitions recognize that wetland boundaries are mobile and that other ecological criteria are required for their identification. Since legally defined boundaries will not move, they will need to be established by negotiation.

Currently wetlands are not categorized according to uses, functions, or health; as part of the Demarcation Strategy, they will become so. The criteria for their categorization will be based on the *Kampala Matrix* developed by the National Wetlands Programme. For a given wetland, the matrix provides a subjective ranking based on the wetlands importance (vital, valuable, dispensable) and its status (threatened, not threatened, destroyed). The

⁴⁹ National Environment (Wetlands, River Banks, and Lake Shores Management) Regulations, 2000.

categorization will be used for decisions pertaining to levels of use and protection, for management approaches and gazettement decisions.

Demarcation of wetland boundaries will be a lengthy consultative and legal process, particularly because boundaries will need to be negotiated by interested parties. Then they will have to be categorized, which will be a highly subjective exercise. Gazettement decisions will require public participation, a process for potential land acquisition, and measures for compensation to affected parties. Given the country's experience with the allocation of natural resources, the entire process—demarcation, categorization, and gazettement—will be fraught with political interference.

In accordance with the NDP and WSSP, the goal of the Strategy is to *provide a framework for effective wetland (and forest) boundary demarcation and gazettement in Uganda*. To do so, the Strategy must address knowledge and information gaps of stakeholders, political leaders, and the technical people involved in the process. It must enable the institutional framework with mechanisms for identification and compensation of genuine landowners, and it needs to provide guidance to communities for management planning in wetlands, according to their categorization.

The greatest challenge to the Strategy will be in ensuring that the demarcation and gazettement processes for wetland conservation are not hijacked by a political agenda.

9.5 Wetlands Dependency

Wetlands are an important natural resource that contributes to the health of the environment and the socioeconomic development of the country. They hold an enormous amount of freshwater, estimated at 20 km³. They provide essential life support through stabilization of the hydrological cycle and microclimates, protection of riverbanks and lakeshores, nutrient and toxin retention, sewage treatment, groundwater recharge, and flood buffering. In addition, they have high biodiversity values, providing wetland products and habitat for wildlife, migratory birds, and fish-breeding grounds.

At least 8 million people directly depend on wetlands water for water supply. It is estimated that wetlands provide some 320,000 workers with direct employment, and another 2.4 million people with subsistence employment.⁵⁰ Over 70 percent of all wetlands in Uganda are used for water collection, livestock grazing, and tree harvesting. Other top uses include beekeeping, fishing, hunting, and cultivation for food and fiber (WMD and WRI 2009). The wetlands provide construction materials for domestic use and small-scale industry (poles, papyrus, clay, and sand), and wetland biodiversity is starting to attract tourism revenue.

Degraded wetlands threaten water supply and water quality, and increase the risk of flooding of the sort that occurred in eastern regions in 2007 and 2010. Wetland resources are particularly important for subsistence activities, hence their degradation disproportionately affects the economic security of the poor.

⁵⁰ Updated WSSP 2001–10 estimate.

9.6 Wetland Degradation

Despite their importance for the socioeconomic well-being of a large number of people, Ugandan wetlands are being lost at alarming rates. Current estimates by the WMD, indicate that between 1994 and 2008, wetland areas declined by 30 percent, going from 37,575 hectares to 26,308 hectares. The major causes of wetland degradation are encroachment for agriculture, sand and clay mining, deforestation of swamp forests, and garbage dumping (box 9.1).

Wetlands are reclaimed for subsistence and commercial cultivation, and livestock rearing. In western Uganda many wetlands have been converted into agricultural land and large-scale dairy farms. In the east almost all the seasonal wetland valley bottoms fit for rice cultivation have been so converted. In some parts of the southwest, large areas of wetlands have been converted to pasture for grazing, or to cultivation. Damage to permanent wetlands in rural areas, however, is generally still limited. Poor accessibility and lack of suitable drainage technology give them some natural protection from encroachment and wholesale drainage.

Pressure on wetlands has been mounting in urban areas. In Kampala wetlands are the last free or cheap areas for industrial and infrastructure development. Despite designation of most wetlands as “green corridors” in the Kampala Structural Plan (1994), many sections have been converted to industrial use or have gradually been taken over by semi-slum residential housing and associated uses including cultivation and waste disposal.

Box 9.1 Threats to Wetlands

- Channeling and draining of wetlands for crop and livestock agriculture.
- Excessive removal of sand and clay materials.
- Catchment degradation from deforestation and unsustainable land causing runoff and siltation.
- In-filling to enable construction of infrastructure and buildings for industry and settlements, especially in urban and peri-urban areas.
- Pollution and eutrophication from domestic, agricultural, and industrial effluents.
- Pollution from solid wastes such as the polythene bags.
- Excessive water extraction.
- Overharvesting and plant and animal resources.
- Introduction of invasive alien plant species.
- Persistent silent and/or active resistance of degraders.
- Climate change impacts that cause changes in wetland boundaries.

The underlying causes of wetland degradation in Uganda are:

- *Population pressure* that translates into a high demand for agriculture land and settlement areas, in both rural and urban areas.
- *Political interference* that encourages encroachment of wetland areas by the poor as a means of soliciting political capital; it also facilitates development projects and other violations of wetland laws.
- *Institutional failure* that manifests in poor implementation and enforcement of the wetland policy. Central and local government roles are not well defined, and there are contradictory government policies for urbanization and industrial development.

- *Inadequate management capacity* for wetlands management is linked to an overall inadequate funding to address data and information gaps including wetland functions and economic values, wetland hydrology, boundaries and categorization, and the impacts of climate change on wetlands.
- *Lack of awareness* of the multiple functions of wetlands among leaders and local people perpetuates the attitude that they are simply wastelands with no better use than reclamation for agriculture or dumping.
- *Climate change* is expected to cause wetlands areas to shrink in size. Between 1991 and 2000, Uganda experienced 7 droughts in the period of 10 years. It is predicted that the frequency and intensity of such extreme weather events will increase with climate change.

9.7 Political Interference

Political interference undermines the efforts of environment authorities to protect wetlands in accordance with the law. The examples are numerous to the point where political interference competes with lack of funding for the second-biggest challenge to wetland protection, after population pressure.

The flouting of wetland protection laws is often speciously justified on the basis that wetland degradation is for the sake of providing communities with economic growth opportunities, as per the PEAP Policy. In these cases, it is local authorities that are the violators of the Constitutional provision that wetlands are to be protected for the common good of the people. In some cases, there may be reasonable social arguments for noneviction, and a community solution to sustainable wetland management then needs to be developed. But in most cases encroachment is for short-lived economic gain—brick making, for example. Most often wetland degradation and the loss of wetland ecosystem services renders the poor poorer, and increasingly vulnerable to climate variability.

In several cases, local political leaders, various commissioners, ministers, members of parliament, and even the President have subverted efforts by NEMA, WMD, and others, to enforce the wetland law, or to achieve local wetland planning and restoration. For example, industries polluting wetlands received support from well-connected individuals to resume their operations after having been closed down by NEMA for violation of environmental regulations. In other instances, public proclamations—usually by politically motivated individuals—have effectively invalidated work by NEMA, WMD, local wetland officials, and other community leaders. In a number of cases, elected officials have openly supported encroachment or other unsustainable activities, thereby undoing the community work under way to find sustainable solutions to wetland use.

Typically, communities and violators presented with these conflicting messages will:

- Disengage from the wetland planning or restoration process *already under way*.
- Abandon the wetland restoration *already under way*.
- Obstruct restoration efforts by those charged with the task.
- Reject further technical advice for sustainable wetland management.
- Increase encroachment into other local intact wetlands.
- Continue using the wetlands as a waste dump.

High-level sanctioning of wetland degradation occurred in January 2006 when, during presidential campaigns, the President issued a Directive to halt evictions of encroachers in wetlands (and forest reserves). It has been widely interpreted as authorized unconditional encroachment into forest reserves and wetlands. It undermines efforts by the NEMA and WMD to protect wetlands (and forests) as stipulated in the country's environmental laws and regulations.

In addition to the cases where political interference has flagrantly pitted regulators against wetland inhabitants, there are other more clandestine violations of wetland law. Dumping of wetland fills and waste material occurs at night and on holidays, to avoid Environment Inspectors. Dumping has also occurred with protection from hired armed security personnel, which effectively deters the Environmental Inspectors from doing their job.

More systemic abrogation of the law relates to the selling and allocation of wetland areas by government officials. It is illegal to sell wetlands, yet Local Councils in many parts of the country are known to be involved in the illegal sale of wetland plots. In Kampala and Wakiso Districts, the Uganda Lands Commission (ULC) has allocated wetland areas for residential and industrial development. In mid-2010, the Policy Committee on the Environment (PCE) addressed the issuance of wetland land titles. The PCE directed the Kampala City Council and the ULC to cancel all land titles issued after 1995, but compliance is yet to occur.⁵¹

The community wetland management planning process and regulation enforcement is time and resource consuming. Irresponsible behavior that obstructs the planning process or the enforcement of environmental law for wetland protection squanders scarce government resources. Funding for ENR is already extremely low; thwarting initiatives under way, or fomenting discord for political ends, wastes the ENR budget and ultimately increases the costs of environmental management.

9.8 Institutional Framework for Wetlands Management

National Policy for the Conservation and Management of Wetlands, 1995

The National Policy for the Conservation and Management of Wetland Resources provides the basis for management and use of wetlands in Uganda. It promotes wetland conservation and sustainable use for present and future generations. The specific Policy strategies are to ensure that:

- Wetlands are not drained.
- Only nondestructive uses are carried out in and around wetlands.
- Wetlands are utilized in such a way as not to lose traditional benefits and the decisions consider requirements of other users.
- Development projects in wetlands are subjected to Environmental Impact Assessments (EIAs) and audits.
- The government establishes protected wetland areas with levels of recommended use.
- An optimum diversity of uses is maintained and consideration for other stakeholders when using a wetland.

⁵¹As of February 2011.

Legislation Relevant to Wetlands

No law specific to wetlands exists, other than provisions in other legislative frameworks. A National Wetlands Bill is under preparation and has been discussed with relevant institutions. In the meantime, wetlands protection draws on different pieces of Ugandan legislation including the Constitution, the Land Act, and the NEA and its regulations.

The *National Constitution of Uganda (1995)* states that it will hold in trust and protect all natural resources for which it has custodial responsibility; wetlands fall into that category. It also contains provisions relating to protection of all natural resources, including wetlands; moreover, it also states that it will promote good water management systems at all levels.

Wetlands are included in the *Local Governments (LG) Act (1997)*. The Act devolves wetlands management to district authorities, who cannot sell, lease, or alienate wetlands under their jurisdiction. Districts are to manage wetlands according to the Constitution (1995), the NEA (1995), and the Wetland Policy (1995). In accordance with the LG Act, districts appoint technical officers to implement wetlands activities. But, their capacity to fulfill their mandate is constrained by limited funding.

The *National Environment Act (1995)* addresses all aspects of biodiversity conservation, and provides various legal requirements relevant to sustainable wetland management. The Act stipulates that anyone wishing to develop or modify a wetland is required to undertake an EIA, if the area to be developed exceeds 0.25 hectares. Without a satisfactory EIA and written approval from the NEMA, it is an offence for any person or organization to carry out any of the following activities in a wetland⁵²:

- Drain it
- Reclaim or fill it in
- Build or place anything in or on it
- Demolish anything in or on it
- Dump harmful waste, rubbish, or anything else in it
- Disturb it
- Add any foreign species to it

But according to the Act, NEMA can generally exempt traditional uses of wetlands from these restrictions where such activities are sustainable and do not result in environmental degradation or overharvesting. Examples of traditional wetland uses that can be exempted include fishing, harvesting of grasses, water collection, and cattle grazing.

To make the laws protecting wetlands and other natural resources operational, NEMA developed the National Environment (Wetlands, River Banks and Lake Shores Management) Regulations (2000). These regulations are supposed to be supported by technical guidelines on wetland use.

The *National Environment Regulations (2000) for Wetlands, Riverbanks and Lakeshores Management* are to provide an integrated approach to the management of these ecosystems. They are to assist districts with the implementation of environmental laws

⁵² National Environment Act, Cap. 153.

pertaining to aquatic ecosystems and resources—including the prohibition of governments to lease or alienate any wetland.

The Regulations target water catchment conservation and flood control, identification of riverbanks at risk from environmental degradation, and promote soil conservation measures along riverbanks such as bundling, terracing, mulching, tree planting, grassing, zoning and planning, and control of livestock. They also stipulate set-backs to lakes and river shore wetlands.

Other potentially relevant legislation includes the *Water Act*, which should provide some measure of wetland protection in that it is a water resource and the use and development of water resources is to be orderly, and management is to be rational. The *Prohibition of the Burning of Grass Act* should protect wetlands from the threat of burning, but the law has not been tried and it needs updating. Similarly, wetlands might garner some protection from the *Penal Code Act* that sets stiff penalties for damage to crops, but it has not been used to halt wetland burning.

National Wetlands Resources Management Bill, 2009

A Wetland Act is sought because wetland protection is scattered in different policies and laws, making it difficult to enforce the legal provisions for wetland management. A draft Bill has been formulated using information collected from key stakeholders on the gaps in the existing legal provisions. It is currently in its final stages of completion. The main sections of the draft Bill provide for:

- Classification, including categorization of wetlands, and designation of wetlands.
- Administration/jurisdiction of wetlands.
- Protection and conservation of wetlands.
- Acceptable and prohibited wetlands-related activities.
- Offences and deterrent penalties for the contravention of the Act and related matters.

The key aspects of the draft Bill that are lacking in the existing provisions in different policies and legislation supporting wetland management are:

- Clearly defined roles, mandates, and jurisdiction for wetland management.
- A wetland classification and categorization system not well defined in the existing legislation, or in the Wetland Policy.
- Introduction of a Wetland Fund.
- Demarcation of wetland boundaries.
- Punitive penalties and fines.
- A redefinition of who can grant wetland use permits.

District Ordinances and Bylaws

The LG Act (2007) empowers LGs to enact district-level ordinances and local level bylaws. For wetlands, such measures can support conservation and management initiatives. But for LGs to enact ordinances, political support from all stakeholders, across all implicated jurisdictions is required. Achieving broad-based agreement can be difficult if conservation measures run contrary to political agendas (box 9.2). A handful of districts (at least five)

have formulated wetland resources ordinances, and at least one municipality has a wetlands bylaw.⁵³

Box 9.2 Political Interference in Wetland Management in Kumi District

In response to the high levels of wetland degradation, the District initiated a process of ordinance formulation involving approvals from the sub-county to district levels. After a lengthy consultative and sensitization process, the District Council approved the draft ordinance. Among the key management guidelines was a process of issuing user permits for payment of user fees of US\$20,000 per half acre for 2 years, which is in line with the policies and legislation in Uganda. The user fees for wetlands were to be managed by the District and would act as one of the sources of revenue to help with wetland resources management. At the time of enactment, people supported the ordinance and about 300 people had collected forms to apply for wetland user permits.

Unfortunately, fearing loss of voter support, the District Chairperson decided to disown the ordinance and openly criticized it on the local FM radio station. He called upon local communities to ignore the wetland user permits and its fees. The work and support by Councilors was effectively undone through interference motivated by political gain. The governance challenge is how to balance innovative and potentially controversial resource management decisions with political realities. The biggest losers are the poor communities that are becoming poorer from wetland degradation.

Source: Kakuru 2011.

9.9 Management Structures for Wetlands Conservation

Government institutions, semi-autonomous agencies, the private sector, national and international nongovernmental organizations (NGOs), and civil society organisations (CSOs) are all implicated to varying degrees in wetland management. Ideally they work together with technical and policy guidance by MWE.

Wetlands Management Department (WMD)

The WMD of the MWE is the lead Agency mandated and responsible for wetlands management. It formulates wetland policy, legislation, standards, and guidelines, and undertakes supervision and monitoring, technical support, and resource mobilization. It liaises and builds capacity in local and national government agencies to ensure the integration of wetlands issues into policies and strategies of other sectors—agriculture, forestry, fisheries, water, industry, and rural and urban planning. It promotes wetlands research and management and provides technical support to different stakeholders. It develops site-specific and national-level interventions and projects and is the Authority for the Ramsar Convention.

The Role of the NEMA for Wetlands Management

As the regulatory authority, NEMA has to protect wetlands through its role in enforcement of the National Environment Regulations, which includes the application of the EIA process. The WMD collaborates with NEMA to enforce compliance with wetlands policy and regulations. Since 1997, proposed large-scale developments in wetlands are subject to the EIA process; smaller-scale developments with potentially significant *cumulative* impacts are, however, exempt. NEMA can conduct Environmental Audits on ongoing projects. Environmental easements can impose obligations on wetlands users for minimizing impacts, but they have not been practically applied.

⁵³ WSSP 2011–20, draft November 2009.

The ability of NEMA to fulfill its mandate in applying the Regulations, and EIA process has been fraught with political interference. NEMA has at times been pressed to approve EIAs for wetland development, in spite of the legal contraventions implied by the development. Apart from the EIA process, there have been some successes such as in 2004, when “environmental restoration orders” issued to encroachers were successfully implemented. With the Presidential Directive banning the eviction of encroachers, problems of encroachment increased, as did the difficulty to persuade encroachers to leave. But of late the establishment of an environmental police has been announced to aid environmental authorities with eviction of encroachers.

Regional Technical Support Units (RTSUs)

During the first WSSP (2001–10), four RTSUs each staffed with a Regional Wetland Coordinator were established by WMD to provide technical backstopping to districts. The offices were established through memoranda of understanding (MOUs) with the hosting districts (Mbarara, Mbale, Lira, and Mukono). Three of the Units are still in operation with Wetlands Coordinators but amidst budget constraints, a review is under way to reduce their operations.

District Local Governments

Under the WMD, District Governments are responsible for local wetland management. The District Environment Officer (or Wetlands Officer, if the post is filled) is responsible for wetlands. He/she works with the District and Local Environment Committees, and the District Technical Planning Committee to coordinate and monitor wetlands management; develop District Wetlands Action Plans; enforce wetlands laws; maintain wetlands information and data; identify critical wetlands; ensure Ramsar obligations are met; and mobilize communities, NGOs, and community-based organizations (CBOs) for wetlands management planning and implementation.

District environmental officers are underfinanced and understaffed. As discussed in chapter 4, essentially the only funding they receive comes from the PAF, which although earmarked for wetlands initiatives, is small, declining, and usually late in coming. They do not have the capacity to fulfill the mandated tasks on the funding that they receive.

➤ Community Based Wetland Management Planning (CBWMP)

Supported by the WMD, district LGs and their partners (NGOs and CBOs) promote the involvement and partnership of communities in the planning for sustainable use of wetland resources. To that end, for each wetland, they facilitate the CBWMP.

Community participation in wetlands management has evolved over the years, and the lessons learned from the various approaches tried are summarized in box 9.3. Currently, an “ecosystem” approach is the basis for developing the management plan. The idea is that all stakeholders in a wetland participate in a series of activities that includes stakeholder identification, resource analysis, representation in the planning process, identification of issues and opportunities, management plan development, feedback and approval, and plan implementation. The approach considers the wetland’s interaction with the catchment area, the full range of wetlands ecosystem goods and services, and the parameters for sustainable development of the particular wetland area.

Box 9.3 Achieving Community Management of Wetlands

Lessons learned from community wetland planning:

- Financial sustainability of the processes (planning and implementation) is necessary to ensure that stakeholders can participate at all stages, and thereby “own” the Plan.
- Community expectations are always very high.
- Economically viable alternatives are generally good incentives for community participation in wetland management and conservation.
- Livelihood improvement needs to be balanced against conservation issues.
- For successful management and conservation of wetlands, all efforts should be made to raise implementation funding for the plans over a long period of time.
- Attention to transboundary, interdistrict issues is required.
- The long-term sustainability of the Plan needs to be an objective from the onset of the planning process to motivate the long-term self-investment of community members.

Source: Kakuru 2011.

The CBWMP processes try to address problems and conflicts in a specified wetland area. *Participatory Wetland Appraisals* enable wetland managers to harness the active involvement and participation of local communities and other stakeholders in assessing, planning and managing their wetland resources. *Wetland Management Framework Plans* build on traditional wetland management arrangements, and aim to provide benefits to the wider community. Existing planning and budgeting frameworks are used to ensure that wetland issues are integrated at all levels, from the bottom up to their final inclusion in District Development Plans (DDPs). The planning tools are used consider the various stakeholder groups (men, women, youth), other economic and natural resource sectors, the private sector, and civil society. Management decisions are also informed—ideally—by an economic evaluation of the benefits of the wetland in question.

The WMD and its partners have now prepared about 40 CBWMPs; about one-third, are at implementation. Key management actions include awareness and sensitization, promotion of income-generating activities as incentives and alternatives for wetland management, conservation, and bylaw development. Some management actions have been implemented while others are pending, mainly due to limited financial resources.

9.10 Monitoring Compliance and Enforcement

The WMD is mandated to provide technical guidance on the EIAs conducted by potential investors, and Environment Audits on existing investments. Some 400 Enforcement Officers and WMD staff have received training in the legal, technical, communication, and administrative aspects of enforcing environmental compliance. The WMD has been involved in eviction, halting of illegal developments, and restoration activities for different wetlands in the country.

Typically, enforcement proceeds from inspection, to discussions with developers, to legal action. When an environmental regulation is contravened, or conditions of EIA approval are not undertaken, the NEMA delivers an “Improvement Notice” to the developer, copied to the District Environment Officer. The latter must then monitor compliance and either issue a compliance certificate, or refer the case to the legal office for further investigation

and eventual legal action. The case terminates with a magistrate's ruling on reparatory damages, which sets in motion once again the monitoring process at the district level.

Districts are obliged to budget for the provision of "*compliance monitoring*" to potential and existing investors in wetlands. The compliance monitoring and technical guidance roles of the District Technical Officer are blended to create efficiencies. To accommodate these activities, the PAF allocation to wetlands is to be topped up with funds from other LG sources, such as the Local Government Unconditional Grant. But as discussed in chapter 4, the LG unconditional grant generally goes to the payment of salaries because most transfers from the center are conditional, and other revenue sources are limited.

Challenges for Wetlands Monitoring and Compliance

Despite efforts by the WMD, NEMA, and other partners in building capacity at national and local levels in compliance monitoring, there are significant challenges:

- Inadequate capacity—human, equipment, and financial resources—at all levels of governance.
- Lack of political will and support to enforce compliance.
- Diverse land ownership arrangements that complicate enforcement measures.
- Raising awareness and creating positive attitudes toward wetlands among all segments of the population—from the poor to the affluent.
- Lack of operational mechanisms for the management of trans-district wetlands.
- Absence of wetland boundaries, although a demarcation strategy is under formation.
- Inadequate and ineffective wetland surveillance due to limited capacity at all levels.

Despite the challenges, the WMD and its partners have registered success in compliance, monitoring, and enforcement. Government has taken court action against a number of wetland encroachers and these are at different levels of arbitration. The offences include the digging of drainage channels, fencing (the drained) land, cattle grazing, planting pasture, and planting eucalyptus.

9.11 Wetland Restoration and Management Initiatives

Restoration Efforts

In 2001 working with local leaders and communities, the Government of Uganda started to restore critical wetlands. Restoration implies restoring lost services and valued benefits, and it may apply to the whole wetland, or to particular sections of it. Critical wetlands are those for which there is need for immediate action to curtail further degradation, given the level of importance of the wetland to the community dependent upon it.

Aryamanya-Mugisha (2011) provides a listing of some 13 Ugandan wetlands wherein ecosystem services have been restored. As would be expected the importance of most of these wetlands pertains to water supply for production and domestic supply, wastewater treatment in urban centers, and flood control.

NEMA and local governments have provided strong support to the WMD for restoration activities, which is necessary because attempts to survey and zone critical wetlands is often met with resistance from affected stakeholders. The physical process involves removal of water blockages, restoration of water channels, excavation of fill, and replanting of the

known dominant wetland species. Wetlands prioritized for restoration, and the degree of restoration, is guided by the Kampala Matrix, developed by the NWP.

Payment for Ecosystem Services (PES)

The National Water and Sewerage Corporation (NWSC) and certain hydropower generation and supply companies have shown interest in developing new management modalities—such as Payment for Ecosystem Service (PES)—wherein water catchment areas, and particularly wetlands, are managed to reduce downstream siltation. Siltation to water supply infrastructures and hydro reservoir dams increase operation costs of those facilities.

Wetland degradation in western Uganda that affects downstream hydropower supply in certain areas has prompted the implicated districts (Kabale, Rukungiri) to initiate discussions to use electricity proceeds for wetland management.

Corporate Social Responsibility

To avert the pollution discharge into Lake Victoria, the Uganda Breweries Limited (UBL) initiated a partnership with the WMD that led to the construction of a wetland to treat the company's effluent. The investment cost of the wetland was reportedly \$500,000. The arrangement has been successful, and the WMD would like to scale up this type of approach

9.12 Funding for Wetlands Management

Of the \$16 million received by the MWE for its ENR sector (chapter 4), the WMD received about \$70,000. Total funding to the districts, through the National Wetland Program amounted to \$300,000. As discussed in chapter 4, ENR funding at the district levels is too low and unpredictable for planning, implementation, and enforcement activities. Low funding to the WMD limits its ability to undertake policy, analysis, and strategy development activities, and to ensure technical support to the districts through the remaining three RTSUs. The latter are already minimal, but are to be “streamlined” further due to budget constraints.

Donor-supported projects fill some of the wetland funding gap. Table 9.1 provides a list of projects specifically targeting wetlands, currently under way in Uganda. There are larger projects with multiple objectives such as the Lake Victoria LVBEMPII, and the Kagera River Basin TAMP projects that are regional, and contain wetlands as part of coordinated resource management.

All the wetlands projects have institutional capacity-building objectives, but the World Resources Institute's (WRI's) work with the WMD is devoted solely to capacity development in the WMD; the other projects are on the ground with pilot projects.

Table 9.1 Wetland Projects Under way

Project/Program	Objectives/Strategies
<p>WETwin Project in Nabajuzzi and Namatala Wetlands</p> <p>UNESCO-Institute for Water Education (IHE)</p>	<ul style="list-style-type: none"> • Phased project approach to develop decision support tools, augment the NWIS data, and build capacity. • Enhance the role of wetlands in basin-scale IWRM to: <ul style="list-style-type: none"> – Improve water and sanitation services of wetlands. – Preserve ecosystem functions of wetlands. – Develop adaptation strategies for environmental change. – Share and benefit from exchange of expertise. – Increase capacity of stakeholders to integrate wetlands into river basin management.
<p>Wetland classification support to the WMD</p> <p>World Resource Institute</p>	<ul style="list-style-type: none"> • Development of a wetland classification system based on multiple criteria related to ecosystem services and biodiversity. • Classification system to inform: <ul style="list-style-type: none"> – DWD planning for water for production and domestic water supply. – MAAIF planning for water for production planning. – Climate Change Unit for adaptation and mitigation initiatives. – NEMA's EIA review process for projects impacting wetlands. – EIA practitioners and others for valuation of ecosystem services.
<p>Managing wetland resources for food security in Uganda</p> <p>Implemented by Makerere University</p> <p>Funded by IDRC</p>	<p>Implemented in Pallisa and Kibuku Districts (east), Wakiso District (central), Mbarara and Isingiro Districts (west).</p> <ul style="list-style-type: none"> • Improve food security and wetlands ecosystem health and sustainability. • Determine links between wetlands access and food security. • Assess trade-offs between wetlands for food security and wetlands for other ecosystem services. • Test, adapt, and promote gender-balance innovations for combined wetland conservation and food security. • Inform and guide policy for food security and conservation.
<p>Extending protected area management through community-based initiatives</p> <p>GEF supported</p>	<ul style="list-style-type: none"> • To strengthen the Uganda National Protected Area (PA) network by expanding the coverage of the PA network to include the country's biologically important wetland ecosystems. • Develop site-specific management plans, ordinances, and bylaws. • Inventory wetlands and their socioeconomic values. • Assemble best practices for sustainable wetland development. • Integrate community conservation models into national planning and protected area planning.
<p>Ramsar Centre for Eastern Africa</p> <p>Regional initiative</p>	<ul style="list-style-type: none"> • Establish a regional centre of excellence for wetland management through a virtual unit within the WMD. • Strengthen institutional capacity for wetlands management in the EAC countries and in other governments in the regions. • Link to other regional and subregional wetland initiatives. • Coordinate wetland management through resource mobilization and experience sharing.

Source: Project Documents.

Note: DWD = Directorate of Water Development; AC = East African Community; EIA = Environmental Impact Assessment; GEF = Global Environment Facility; IDRC = International Development Research Centre; IWRM = Integrated Water Resource Management, MAAIF = Ministry of Agriculture, Animal Industry and Fisheries; NWIS = National Wetland Information System; UNESCO = United Nations Educational, Scientific and Cultural Organization; WMD = Wetlands Management Department.

9.13 Recommendations

Provide Legislation to Strengthen Management

Legal provisions scattered across various pieces of legislation provide an inadequate legal framework for wetland protection and management. Wetlands, like other natural resources, require comprehensive legislative treatment, starting with clearly defined mandates for managers. Legislation can provide a foundation for improving the financial capacity of management through a Wetland Fund, and through the establishment of a legislated wetland classification system that places a value (albeit qualitative) on wetlands.

Linked to wetland classification is wetland boundary demarcation. Wetland legislation will provide for the establishment of wetland boundaries. Wetland areas are currently not legally defined, which makes them vulnerable to encroachment, complicates management efforts, and fuels conflict. Clarity over wetland boundaries and relative values will facilitate effective management.

Improve Transparency and Accountability

Perhaps no other sector is as fraught with political interference and corruption as wetlands. The lack of sector-specific legislation, the perception of open access, and the persistent attitude that wetlands are wastelands leads to opportunistic behavior by both encroachers and well-placed individuals.

The development of a demarcation strategy is likely to be particularly plagued by interference and corruption because wetland boundary definition and classification will require a great deal of negotiation with local governments and communities. To reduce the opportunity for interference and corruption, a Governance and Anti-Corruption (GAC) Plan should be formulated to provide the checks and balances in the process, to make it as transparent as possible.

Support Public Participation in Wetland Management

Thwarting political interference in wetland management requires building public awareness about wetlands, including the provisions of the Land Act regarding wetland stewardship, wetland regulations, and potential wetland benefits and the possibilities to capture those benefits. Increasing awareness starts with public participation in wetland management through the CBWMPs. To be successful, these need to be supported financially from the planning through to the implementation processes.

Enable Management with Data and Information

Effective wetland management requires data. Wetland boundary demarcation and classification will greatly improve the current dearth of information. But data on wetland products and services are lacking, and linkages between existing databases across ministries and MWE departments are weak. The data needs to be harmonized and accessible for it to be useful for analysis and planning.

Enable Capacity with Funding

The total government budget to wetland management in FY2009–10 was \$370,000; \$70,000 for central management at the WMD and the remaining \$300,000 spread among

districts. The value of water supply alone is estimated at over \$100 million; the value of livestock forage is another \$90.5 million (table 2.1). Currently this resource is being managed with less than 0.2 percent of its income value.

To improve management of wetlands, investment in the sector needs to increase. The management tasks include: support to districts for community-based wetland planning and management, realization of the demarcation and classification strategy, data development, intersectoral coordination for Sustainable Land Management (SLM) and Water for Production (WfP), and wetland regulation enforcement. Investment is needed to develop management plans that include strategies to increase the economic efficiency of wetland use (through PES), and that provide incentives to users to become effective stewards of this public resource.

Chapter 10. Fisheries, with attention to non–Lake Victoria Fisheries

Main Messages

- *At least 90 percent of total fish production is for the domestic market.*
- *At least 40 percent of fish consumed domestically is from non–Lake Victoria Fisheries.*
- *Fisheries are threatened by management and environmental stressors.*
- *Overfishing threatens the country’s fisheries wealth.*
- *Data and information about fisheries—especially non–Lake Victoria Fisheries—are severely lacking and prevent informed policy and planning.*
- *Fisheries legislation needs to be updated.*
- *Aquaculture is potentially promising but needs support.*
- *Corruption is a constraint to local fisheries management efforts.*

Water bodies cover 20 percent of Uganda. They include five major lakes—Victoria, Kyoga, Albert, George, and Edward—and another 160 minor lakes, rivers, and wetlands that together support over 350 fish species. The fisheries sector is of high socioeconomic importance to Uganda in terms of its contribution to national goals of poverty eradication and food security. It is an important foreign exchange earner: fish and fish products constitute Uganda’s second-largest export after coffee.

Evidence indicates that fish stocks are under threat. Pressure on wild stocks due to fast growing local, regional, and international markets, coupled with outdated legislation and inadequate enforcement of existing fishing regulations has led to overfishing. As a means to boost production and relieve pressure on the lake stocks, aquaculture is being promoted.

The lakes—both Lake Victoria and non–Lake Victoria—face challenges apart from overfishing: pollution from industrial and domestic effluent and agricultural runoffs, sedimentation and shrinkage from erosion and riverbank reclamation, algal blooms, and biodiversity loss. Biodiversity is threatened on Lake Victoria, which at one time had many species of fish but is now dominated by three main species of Nile Perch. Lake Albert is affected by sediment carried by the Semliki River. At its southwestern end, where fish breeding sites are numerous, silting is reducing water depth as the shoreline expands into the lake. In southern Uganda, Lakes Bunyoni and Mutanda are at threat to both silting and encroachment on their shores. Fish productivity declines in these lakes are blamed on the disturbance of fish-breeding sites. Yet, smaller lakes such as Murehe, Chahafi, and Kayumba, being shallow, could disappear entirely because of heavy silting.

10.1 Fisheries Dependency

Artisanal fishermen dominate Uganda’s fisheries. The sector employs directly over 300,000 people. Another 1.2 million people are indirectly employed in secondary and tertiary activities including fish processing and trade, boat building, net making, fishing equipment trade, fisheries research, extension services, and administration.

Fish products are an important and affordable source of protein for Ugandans, with average per capita consumption to be around 10 kilograms per year (kg/yr), accounting for more than 50 percent of animal protein intake of an average Ugandan diet. Total domestic consumption in 2009 was some 352,000 tonnes. Given population growth projections,

maintaining per capita consumption at current levels will require about 376,000 tonnes of fish by 2015.

Figure 10.1 shows the total production for Uganda fisheries over the 2003–09 period. Domestic consumption has consistently taken around 90 percent of total production, leaving some 10 percent for the export market. In recent years, domestic consumption is in fact squeezing out exports to the point where in 2009, exports accounted for only 5 percent of total production.

10.2 Fisheries Production

In 2009 the total production of fish and fish products was about 367,000 tonnes, valued at \$430 million. Of this, Lake Victoria fisheries accounted for about 226,000 tonnes, and the other lakes, 150,000 tonnes. If estimated illegal exports are included, the total tonnage from all the lakes rises to some 375,000 tonnes, worth some \$440 million.

Fish exports are the second-largest foreign exchange earner for Uganda. Export tonnage and revenues peaked in 2005 at 39,200 tonnes and \$143 million, respectively. Since that time, export volume has fallen 61 percent: in 2010 it was at 15,400 tonnes. Increases in fish prices, however, soften the blow to export revenue. It dropped 43 percent to \$82 million.

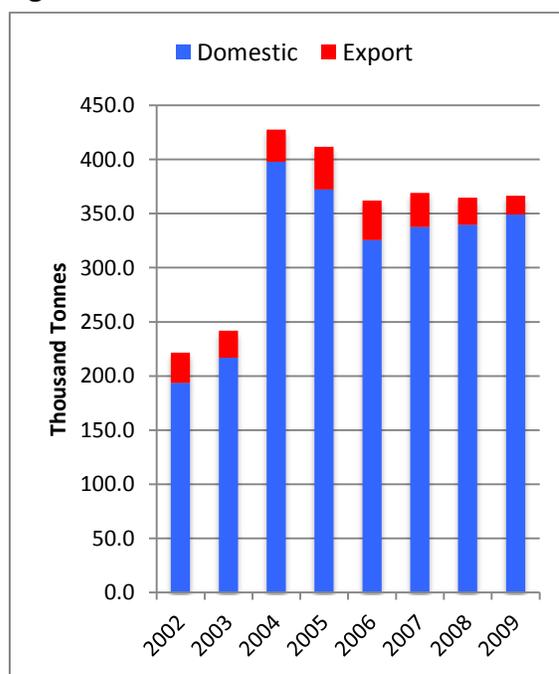
Production Trends

The fisheries sector evolved from a locally focused industry with a limited capital base, to one boasting high investment for a high level of technology for fish catching, processing, marketing, and export to regional and international markets.

Between 1961 and 2004, total fish production from Ugandan lakes rose from 60,000 tonnes to about 430,000 tonnes. Total production had increased gradually to 200,000 tonnes by the mid-1990s, then it jumped dramatically in 2001. In that year, fish export volume essentially doubled from 15,000 tonnes to 29,000 tonnes. Nile Perch formed the basis of export trade to the European Union.

Since the mid-1980s Lake Victoria fisheries have accounted for at least 50 percent of total catches. In 2000 its proportion jumped to 60 percent of the total where it remains (as of 2009). In the 1990s fish-processing factories began to be established on the lake, and throughout the decade production was in the order of 100,000 tonnes per year. In 2001 production began to climb steadily until it reached a peak of 253,000 tonnes in 2005. It has since fallen back to around 220,000 tonnes, and there are fears across the agencies responsible for fisheries that Lake Victoria's stocks are starting to dwindle. Eight out of 18

Figure 10.1 Fisheries Market Allocation



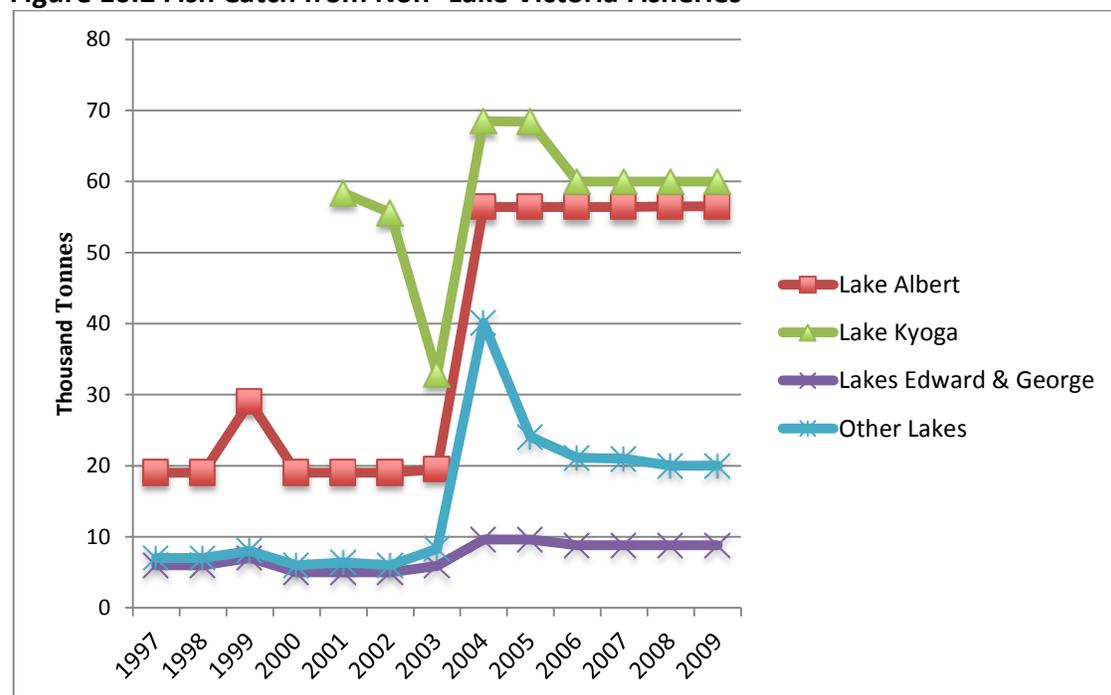
Source: UBOS 2010; MAAIF 2010a.

fish-processing plants have closed on Lake Victoria, and others are threatened with closure (MAAIF 2010a).

There are fears that the situation is worse for the other lakes. Non-Lake Victoria fisheries appear to have followed a similar production pattern: steady production levels throughout the 1990s, sharp increase around 2003–04 before starting a decline. Lake Albert's production was fairly level at about 20,000 tonnes/yr until 2004 when it more than doubled to 56,000 tonnes. (Lake Albert has the only other processing factory apart from those on Lake Victoria.) Lake Kyoga's catch was over 167,000 tonnes in the 1980s, but has settled just under 60,000 tonnes since 2006.

Lake Albert's production and that of the "other" lakes became relatively more important over the 2001–07 period. The increase in the Lake Albert catch may be attributed to the emergence of a new light fishery targeting the small pelagic fish, while the decrease in Lake Kyoga—a shallow lake with an average depth of 3 meters—could be associated with the loss of fish habitat linked to the receding water levels as a result of climate change. Figure 10.2 shows catch trends from some major non-Lake Victoria fisheries from 2001 to 2007.

Figure 10.2 Fish Catch from Non-Lake Victoria Fisheries



Source: UBOS 2010.

Caution is required in interpreting the data. The production jump in the 2003–04 may be at least partially due to data reporting. For example, catch data for the "other" non-Lake Victoria fisheries jumps 500 percent, which suggests data irregularity. But the level of recorded exports—a fairly reliable observation—did double, so the trend must be essentially correct.

Informal Activity

Unrecorded fish production is traded illegally to factories, and neighboring countries. A survey of the informal fish trade by the Uganda Bureau of Statistics (UBOS) and the Bank of Uganda (2007) found that the value of illegal fish exports were the highest value category (14 percent) of all informally traded goods in Uganda. In 2006 fish worth about \$33 million was exported illegally to the neighboring countries of the Democratic Republic of Congo, Sudan, Kenya, and Rwanda, for an illegal tonnage in the order of 2.3 percent of total production: about 8,300 tonnes.

Sustainable Yield

The maximum sustainable yield (MSY) is estimated at 320,000 tonnes/yr for all the lakes combined (figure 10.3). But the total catch in 2004 was estimated at nearly 430,000 tonnes. Since that year, data show that catches decline in all lakes except Lake Albert, which has remained steady at 56,000 tonnes.

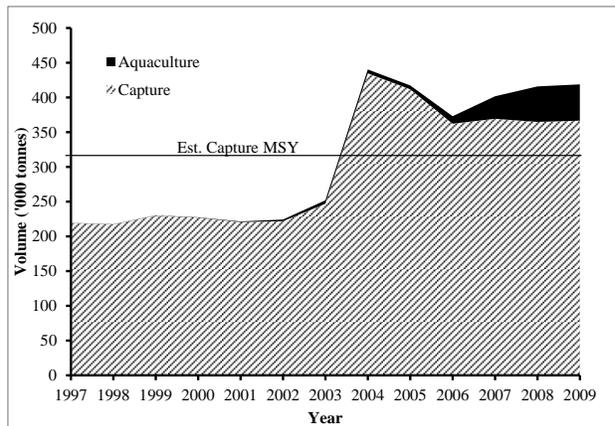
The estimate of MSY depends on the source of the quote—it varies between institutions. In the Fisheries Policy (2004) it is reported at 300,000 tonnes; by the National Environmental Management Authority (NEMA), 320,000; by the Ministry of Water and Environment (MWE), 400,000 tonnes. The Ministry of Agriculture, Animal Industry and Fisheries' (MAAIF's) 2013 target for fisheries production is 530,000 tonnes. Although that target includes aquaculture, the latter is currently around 50,000 tonnes. Even if aquaculture production doubles by 2013, the implied production from capture fisheries still exceeds most estimates of the MSY.

Evidence from case study work, and statements from the MAAIF itself, indicate that there is inadequate knowledge on the status of fish stocks to establish sustainable levels of fishing. Estimates of MSY for individual lake fisheries—apart from Lake Victoria—are unavailable, due to an overall lack of fisheries data on species and stocks, and specific threats faced by the individual lakes in terms of fishing effort, habitat destruction, and pollution.

10.3 Fisheries Capacity to Generate National Wealth

Including illegal tonnage, national income from fisheries is about \$440 million per year (mil/yr). As discussed in chapter 2, these income flows depend upon the country's asset base (or wealth) of fisheries. The national wealth in fisheries is composed of natural capital (fish stocks), produced capital (vessels, processing plants, equipment), and intangible capital (fisheries know-how and institutions). Uganda's natural capital in fish stocks forms a significant part of the nation's wealth-generating capability, and it is particularly important for poverty reduction in the country's rural sector, given that 90 percent of fishers are artisanal, in communities where economic development is marginal.

Figure 10.3 Maximum Sustainable Yield



Source: Ssebisubi 2011.

The actual asset value or wealth of a nation's fish stocks is the net present value (NPV) of the expected net benefits from the total fishing effort applied to those stocks in all future years. Therefore, the greater the annual net benefits (profit) of fishing, the greater will be the asset value of the fisheries. The maximum potential economic wealth associated with the fishery occurs when the NPV of this stream of net benefits is maximized—the net benefits include normal industry profits plus resource rents attributable to the fishery. In the general case this will depend on the cost curve in any year, the population dynamics of the fishery, and the revenue associated with any given level of harvest in that year.⁵⁴ A maximum economic yield (MEY) of the stock in any given year is the harvest in that year corresponding to a wealth-maximizing strategy. In a (best) case scenario that generates maximum wealth, capture of the economic rent (profit) to fisheries is also at its maximum. Any strategy that fails to realize this, foregoes potential rents and decreases wealth.

With a fishing effort consistent with the MSY of fish stocks, rents—and fisheries wealth—are not generally as high as in the maximized MEY case, but at least fish stocks are sustained. This MSY case may be sustainable from a biological perspective, and it may even confer social benefits in the more complex situation where the fishery is regarded as a source of food security during times of crop failure, but it is not very good from a wealth/economic view as it can fall far short of the maximum potential wealth. The reality, however, is that frequently neither MSY nor MEY levels are achieved; a common situation is that in an open access fishery with no effective regulation all rents are dissipated such that the industry only yields normal economic returns, as profits are competed away through increased effort (and costs), even if harvests are technically sustainable (that is, catch equals natural biological yield). Effective regulation entails introduction of regulations, property rights regimes, or taxation instruments that permit rents to be captured: ideally these correspond to maximum rents, which generate maximum asset value for the fishery. In the absence of such regulations, rents fall to zero and, depending on the fishery yield function, such absence may also effectively result in collapse of the fishery. This is the open access situation that eventually depletes the fish stocks and erodes their corresponding asset value. The worst conceivable situation is that there is no effective regulation and the government moreover subsidizes the cost of the fishing effort; economic rent to the sector in this situation may in fact be negative. In this (worst) case scenario, the fishing effort is even higher than it would otherwise be, stock depletion is accelerated, and fisheries become a net drain on the national economy.

Data to calculate the potential wealth of Uganda's non-Lake Victoria fisheries are not available. Volume data from the lakes need to be improved. Minimal historical data on fishing efforts could provide an indication of the evolution of profit levels, but is not available. There are, however, telltale signs that profits in the fishing sector are eroding, if not negative⁵⁵:

- MSY estimates have been surpassed.

⁵⁴ This is a simplified description of the more general case of optimization in a fishery. The optimal harvest may also more generally include externalities such as impacts on other nonfishery or associated fishery resources (for example, through unusable by-catch), and social benefits (such as food security) attributable to a basic food fishery that has a low (or no) discernible market price.

⁵⁵ Drawn from World Bank work in Senegal and Ghana where fisheries profits are estimated to be negative.

- Fish catch is declining.
- Fish size has declined.
- Access regulations are flouted, as are size regulations.
- Shore side processing facilities are substandard.
- Fishers do not invest in refrigeration or other quality improvements.
- Conflicts over ownership of dwindling resources persist.
- Communities remain impoverished, challenged by illnesses and illiteracy.

Even in the absence of hard data, the evidence suggests that there is little or no surplus of income over expenditure in Uganda's fisheries. It appears that too much effort is chasing too few fish, and that there is nothing left over to invest, and quite possibly the stock of produced assets (vessels, equipment) is not being maintained. To the extent that government or donor subsidies have reduced the cost of fishing, the situation is exacerbated, by prompting even higher levels of fishing effort. But more information is required to more accurately judge the extent to which Uganda's fisheries wealth is being eroded, and to formulate policy and legislation according to national objectives for this resource.

10.4 Fisheries Legislation and Policy

Legislation

Uganda's basic fisheries legislation is found in the Fish Act (1964) cap 197. The Act makes general provisions for the control of fishing; the conservation of fish; and its purchase, sale, marketing, and processing. Administrative control of the fisheries sector is vested in the Chief Fisheries Officer who heads the Department of Fisheries Resources (DFR) within the MAAIF. The Act empowers the Chief Fisheries Officer, acting for the Minister, to gazette regulations to support the provisions of the Act. The Fish Rules within the Act regulate the fishing effort: vessel registration; licensing provisions; and offences and enforcement pertaining to prohibited methods of fishing and fishing gear, trade in illegal fish, and the power of fisheries officials.

Other statutory instruments under the Fish Act (1964) regulate other elements of the sector. The Fish (Beach Management) Rules (2003) regulate the establishment of co-management structures: the Beach Management Units (BMUs); they also define the roles of membership, and the BMUs' interaction with other stakeholders in the co-management structure.

The Fish (Aquaculture) Rules (2003) regulate aquaculture practices, particularly at the commercial level. Fish (Quality Assurance) Rules (2008), currently under review, incorporate issues of food safety for aquaculture. Among others, the rules provide for the requirement of an EIA before construction of fish-processing plants, and approved effluent plants by NEMA. In addition, the rules require fish processors to obtain waste discharge permits to monitor effluent discharge, and, where own water sources (ground water) are used, to secure water abstraction permits. The rules also require proof of solid waste disposal system or procedures.

The National Agriculture Research System Act (2005) regulates fisheries and aquaculture research, among other agriculture research areas. It also enables public funding for private research institutions.

The Fishing Rules (1964) legislation was recently replaced by the new Fishing Rules (2010) legislation. The impetus for updating the legislation came from the illegal trade in immature fish, which is blamed for declining stocks. The new rules carry harsher penalties for offenders. However after 9 months of implementation (September 2011), there were complaints by district fisheries officials that the penalties were still too low to be an effective deterrent against illegal activities.

Reportedly the new rules took 4 years to be tabled and adopted by parliament. Legislators feared the tougher rules would cost votes. This may explain in part why a new draft Fisheries Bill (2004) to replace the Fisheries Act (1964) is still awaiting parliamentary approval. By all accounts, the Act is deficient and outdated, and it is reportedly unaligned with the 2004 Fisheries Policy.

The Fisheries Act (1964) does not treat the protection of the fishing environment. Regulations relevant for fisheries protection need to be drawn from the *National Environment Regulations (2000) for Wetlands, Riverbanks and Lakeshores Management* of the National Environment Act. These guide districts with the implementation of environmental laws pertaining to aquatic ecosystems and resources. Lakeshores and riverbanks are considered fragile ecosystems, and as such are accorded protection zones in terms of setback restrictions that limit land-use practices within a certain distance from the lakeshore. The Regulations target water catchment conservation and flood control, identification of riverbanks at risk from environmental degradation, and promote soil conservation measures along riverbanks to prevent siltation.

Fisheries Policy

The current Fisheries Law (1964) is not underpinned by an explicit national fisheries policy or plan. Reportedly, the law rests on an implicit basic policy objective to manage fishery resources to “*obtain the maximum net benefits from them*” (Orach-Meza 1991). The primary goal of the Act’s regulations (the Fishing Rules) is to control access to fisheries resources, recognizing that stocks are uncertain and limited, and there is a tendency to increase capacity beyond a level consistent with sustainable exploitation.

In 2004 an official Fisheries Policy was adopted. Its primary objective remains one of maximizing fisheries productivity, as per the national vision for fisheries:

Sustainable exploitation of the fishery resources to the highest possible levels, thereby maintaining fish availability for both present and future generations without degrading the environment.

The Policy was a break with the past because it changed the approach to management. Co-management was adopted; decentralized management through local governments changed to partnership agreements with communities. Fishing communities are now to be active partners in fisheries planning and development. In partnership with Local Governments (LGs), they are to control access to fisheries, and the use of fisheries revenues. Inclusive management structures are mandatory, and aim at poverty reduction through

empowerment and increased access to resources and decision making by the more marginalized stakeholders in fishing communities.

The Fisheries Policy (2004) provides the overall direction for the sector's development. It also aims to provide coherence with broader national development priorities such as poverty eradication, decentralization, gender and equity, adherence to international commitments, among others. Its key general principles are: sustainable development, precautionary principles, and the user pays principle.

The Policy sets forth 13 policy areas with attendant objectives and strategies. These cover decentralized management, sustainable increases in production, community involvement, interjurisdictional cooperation, development of funding mechanisms, participatory planning, promotion of investment, effective use of information, minimization of environmental impacts, improved fish quality, human resource development, research and development, and aquaculture promotion.

10.5 Fisheries Management Challenges

The Fisheries Policy cites several management challenges including overfishing, inadequate funding, and lack of data. It notes that these stem from inappropriate mechanisms to control access: inadequate monitoring, extension, and enforcement; and insufficient involvement and mobilization of fishing communities. Fisheries case study work undertaken for this CEA in five districts, and earlier case study work (World Bank 2009b) in three different districts, noted the same challenges (table 10.1). These were similarly identified in the current MAAIF Development Strategy and Investment Plan (DSIP) (MAAIF 2010a).

Stock Management and Harvesting Challenges

Inadequate funding constrains the institutional capacity for fisheries management. The MAAIF Public Expenditure Review for the period 2001–02 to 2007–08 found that of all MAAIF operations, fisheries in particular lacked sufficient funds for the program to function effectively.

Lakewide co-management institutions were established on some of the lakes to provide support to the BMUs. However, for lack of funding, the lakewide structures are failing. Similarly, the BMU committees, those closest to the resource, are weak and unable to enforce regulations; they suffer from lack human capacity, corruption, and political interference.

Lack of data severely handicaps the sector. Key management information is lacking: the status of fish stock in the various lakes is unknown, fishing efforts and sustainable harvest levels are unknown, and the location of breeding sites are unknown and unprotected.

Overfishing and the use of illegal and harmful fishing gears and methods is a widespread problem. The increased fishing effort facilitated by illegal equipment and destructive practices permits the capture of immature fish and thereby threatens stock regeneration. Exploited breeding grounds also threaten stock replenishment.

Inadequate harvesting infrastructure such as weighing sheds and clean water causes postharvest losses of 15 to 30 percent in terms of export quality, and reduces the quantity

of fish in the market. Such loss provokes additional fishing efforts to offset expected losses. Harvesting a perishable produce such as fish requires landing sites equipped to meet minimum sanitary requirements including clean water, proper handling, and cooling facilities.

The majority of landing sites in Uganda lack basic landing infrastructure, which decreases fish quality. Fish-handling practices are poor, as the fish are landed under unhygienic conditions either on wooden platforms, stone slabs, or in the sand for sorting, weighing, and packaging.

Table 10.1 Fisheries Management Challenges

<p>Fisheries not being considered as priority in the district budgets</p> <ul style="list-style-type: none"> • Limited financial and human capacity at all levels of local governments (district, sub-county, and BMUs). • Insufficient surveillance. • Insufficient equipment and material: boats, vehicles, fuel, and so on. • Weak capacity to collect and record sector data. • Lack of sustainable funding for lakewide management units. <p>Inadequate data collection and research capacity</p> <ul style="list-style-type: none"> • Inadequate data on fish stocks to establish sustainable levels of fishing. • Breeding and nursery grounds not identified, mapped, or gazetted. • Lack of species-specific management plans. <p>Ineffective deterrence</p> <ul style="list-style-type: none"> • Weak laws, and fines are too low to deter illegal activities. • Weak enforcement of regulations because: <ul style="list-style-type: none"> – <i>Enforcement can be dangerous when illegal fishers are armed and police back-up is nonexistent.</i> – <i>Political interference reverses decisions of fisheries authorities, or provides tax holidays for certain users.</i> – <i>Institutionalized corruption of local BMUs.</i> <p>Habitat degradation</p> <ul style="list-style-type: none"> • Pollution of fisheries from industrial, urban, and agricultural activities. • Resurgence of water hyacinth in certain districts, and emergency of new weeds. • Loss of fish species biodiversity. <p>Increased fishing effort</p> <ul style="list-style-type: none"> • Declining yields prompt increased effort (such as illegal nets) and dissipation of any economic rents from the fisheries resource. • Population pressure from new human settlements on lakesides. <p>Poor quality control</p> <ul style="list-style-type: none"> • High postharvest losses due to inadequate fish-landing infrastructure. • Unhygienic postharvest handling. <p>Other socioeconomic issues</p> <ul style="list-style-type: none"> • Prevalence of HIV/AIDS in fishing communities. • Inadequate mechanisms for fishing communities to save and invest. • Illiteracy, innumeracy. <p>Aquaculture promotion</p> <ul style="list-style-type: none"> • Inadequate capacity to undertake for fisheries development projects. • Inadequate inputs and infrastructure. • Limited seed quality and quantity. • High cost of fish feed.
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Source: Based on MAAIF (2010a) and Matovu (2011).

Note: BMU = Beach Management Unit.

Although most fish processors supply ice and insulating materials to landing sites where they have established regular buying arrangements, landing sites away from the main commercial centers or those not supported directly by processors suffer from lack of cooling equipment. In addition, poor roads make some of these sites inaccessible especially during the rainy season, and the related high transportation costs reduce the buying price at accessible sites.

Adequate refrigeration equipment is also a problem on fishing vessels. The larger boats may not make the investment in such equipment, choosing to absorb higher volumes of lost products. The smaller boats, using rudimentary plastic coolers, will only buy the ice if they are assured higher prices for better-quality fish.

Ownership conflict occurs in many areas because communities are unclear about ownership rights to the resource. Constitutionally, fisheries are common property resources held in trust by government on behalf of Ugandans. Reportedly, many fishers perceive fish and water as resources that cannot be depleted. It is hoped that the BMU approach will remedy this misperception by making resource users collectively responsible for its management.

Cross-border conflicts occur on the shared international water bodies including Lake Albert, Lake Edward, and Lake Victoria. The national fisheries policies and basic legislation for fisheries management do not address the transboundary aspects of the resource. Mechanisms are therefore urgently needed for transboundary collaboration on fisheries resource management and conflict resolution, and to ensure the smooth movement of cross-border people and fish.

Socioeconomic and Attitudinal Challenges

HIV/AIDS is a major challenge facing fishing communities. It is estimated that between 10 to 40 percent of people in the fishing communities of Lake Victoria are HIV positive, rates that are far higher than the national averages of between 6 to 7 percent. Fishing communities are relatively isolated from the outside world and thus have been neglected in the provision of a wide range of social services. They have not been specifically targeted as vulnerable to HIV/AIDS, despite evidence to the contrary.

Malaria, bilharzia, typhoid fever, and diarrheal diseases also affect fishing communities. The increase in the incidences of these diseases is related to the fast growth of lakeside fishing settlements. High rainfall in the lake regions results in stagnant water, which provides breeding ground for mosquitoes. Inadequate access to potable water leads people to drink contaminated lake water, which fosters intestinal parasite infection.

High morbidity and premature mortality in fishing communities threatens both the sustainability of the resource and the communities dependent on it. Communities remain in a poverty trap because illness robs fishermen of the ability to invest. Furthermore, intergenerational stewardship of the resource is built upon accumulated knowledge and experience. Poverty, illness, and early death do not engender the capacity or will to invest in the future.

High illiteracy levels were revealed in a baseline survey of the fishing communities conducted in 2005–06 on Lake Victoria. Most fisherfolk that had gone to school (44

percent) did not complete primary education, many had no education at all (13.6 percent), and women were less educated compared to the men. Fishermen lack the saving and investment culture, and rest confident of a secure tomorrow because of the readily available resources from the lake.

Fisheries Environmental Challenges

Degradation of the water environment due to the increase in human activities around the lake shores has led to water quality deterioration, decreased fish catches and fish biodiversity, and deterioration of fish habitats and breeding grounds. Rising pollution loads from both point (urban centers and industries) and nonpoint sources (agriculture and grass burning) are identified as the major causes of lake degradation. The emerging oil exploration and exploitation in the Lake Albert basin threatens to expose the lake environment to the risks associated with accidental oil spillages. Although national policies, laws, and regulations are in place, enforcement mechanisms are weak and institutional capacity is inadequate to control pollution.

Destructive land-use practices in watersheds—including deforestation, shoreline and riverbank cultivation, and wetland conversion—threatens fisheries productivity. Water yields in wetlands and lakes are declining, shorelines are silted, and river yields and flows are falling. Fish breeding sites, often located in wetlands, are particularly vulnerable to wetland degradation.

Loss of species diversity can occur with the introduction of nonnative species such as the Nile perch. A predatory species, it has reduced the number of fish species in both Lakes Albert and Victoria. The infestation of fishing grounds by *invasive plant species*—hyacinth and other aquatic weeds—interferes with fishing activities and disrupts fish breeding. The infestations appear to be getting worse. At the same time new weeds are also appearing in the growing aquaculture industry.

Climate variability and change will impact vulnerable water ecosystems (box 10.1). Research by Hepworth and Goulden (2008) showed that various stressors compromise the resilience of Uganda's lake ecosystems to climate change. Overfishing, pollution, and reduction in the biodiversity reduces resilience of lake ecosystems, rendering them more vulnerable to the impacts of climate variability and climate change, and susceptible to fishery collapses.

Box 10.1 Climate Change and Uganda's Commercial Fisheries

The impacts of climate change on commercial fishing in Lake Victoria are uncertain. Any reduction in the water level and the impact of extreme climate events resulting from climate change may have significant negative effects on the shallow lake fisheries of the African Great Lakes, including Lake Victoria and Lake Kyoga. Higher temperatures may also have an impact on fisheries productivity and the ecology and species composition in the lake ecosystem, either directly or as a result of changes in mixing of different layers in the water column, or due to changes to oxygen levels and nutrient availability. But little research exists on the effects of temperature changes on shallow lakes in the tropics, although some research on the much deeper Lake Tanganyika has linked declining fish catches to rising temperatures. Any increase in the frequency or severity of flooding events will also cause damage to fishing infrastructure on landing sites.

Source: Hepworth and Goulden 2008.

10.6 Fisheries Co-management

The Fisheries Policy enabled a co-management in Uganda's fisheries, based on BMUs. The Fish (Beach Management) Rules (2003) delegate legal power to local people for fisheries planning and management. Local fisheries stakeholders exercise their power through the BMU. The aim is to achieve greater compliance to fisheries rules (particularly access control) through greater engagement of fisheries stakeholders, while also ensuring that the marginalized poor have access rights, and are able to engage in and influence decision-making processes.

The BMU is the smallest—or micro—level in the co-management structure. Local government and lakewide federating bodies operate at the meso level and the central government level through the DFR in MAAIF, occupies the macro level.

At the micro level, some 700 BMUs have been established at fish-landing sites on major lakes and a few minor lakes. They enable fishers, processors, and traders to legally access fisheries resources. BMUs are authorized to set local fisheries rules as well as lakewide bylaws and ordinances. They are to improve governance at the local level, resolve conflicts, and link fisheries with the local council leadership. At the meso level, individual BMUs work with district LGs to coalesce with other BMUs and form into larger organizations covering the whole lake, such as Lake George Basin Integrated Management Organization. These associations have legal identity within the LG Act. At the macro level, the DFR in MAAIF⁵⁶ is mandated to develop policy, and provide coordination, guidance, and supervision to the sector. It regulates either by devolution to LGs, or by direct action depending on the circumstances. It links fisheries stakeholders at the district and BMU levels to international fisheries management bodies, such as the Lake Victoria Fisheries Organization (LVFO).

Under the LG Act, the DFR collaborates with LGs for collection of fisheries information, fisheries by-law development, co-management promotion, and capacity building. The two levels of government both support local communities in terms of livelihood enhancement strategies, fisheries advisory services, and aquaculture inspection. The DFR delegates to local governments the functions of regulation control, resource monitoring, and revenue collection. Districts have District Fisheries Officers (degree holders) and Assistant Fisheries Officers (degree and diploma holders).

Challenges for Fisheries Co-management

In examining Uganda's move to institute fisheries co-management, Nunan (2006) notes that the Fisheries Policy *"provides a good starting point [for co-management] that must be accompanied by extensive capacity building and support at all levels for the benefits from such an approach to be fully realized."* Empowerment of community-based fisheries management organizations can be effective in managing artisanal fisheries, provided they have legally mandated functions, defined fishing rights, and geographic boundaries. They then need to build capacity to make fisheries management decisions within their management area, and they need institutional support from their partners in co-management. Establishing that management capacity is a long process, requiring a long-

⁵⁶ In 2010 a restructuring of MAAIF was adopted, which included the establishment of a Directorate of Fisheries within the Ministry.

term commitment. In Uganda, although the legal basis for LG–community co-management is in place, inadequate capacity at all levels hobbles management effectiveness.

District Government Management Challenges

The District acts as the primary link with the Center. Policies, laws, and finances are (generally) cascaded down to the sub-county and lower-level administrative units. In reality the sub-county is the focal point of development assistance aimed at reducing poverty through improved governance. It is at this level that the day-to-day business of interaction with fisheries communities and their institutions is focused.

Various constraints faced by fisheries officials in trying to realize their mandates are:

- Limited capacity: insufficient funding and qualified fisheries personnel.
- Limited equipment, transport, fuel, and so on.
- Limited discretionary resources, and little incentive to invest in improved livelihoods.
- Lack of clarity over responsibilities in relation to the Center.
- Limited capacity to address overlapping issues (wetlands, wildlife, fisheries).
- Unclear and outdated laws and policies.

Positive change in the institutional arrangements of the fisheries sector in Uganda will involve easing these constraints. An improved partnership between the DFR and LGs would increase technical support and financial and human resources to the sector.

Communities Roles and Challenges

Community-based organizations (CBOs), under the decentralization policy, are expected to take a leading role in the management of fisheries resources in near shore waters. They are to support LGs in the implementation of laws and policies, monitor the fishing effort, collect data, formulate and enforce bylaws, identify community priorities, and plan and advocate for the fisheries sector within the community. But the constraints they face are many, and they have few financial resources with which to work:

- Migratory and remote lifestyle of fishers is unreceptive to planning and community empowerment.
- Political interference and corruption.
- Inequitable representation of community in CBOs.
- Limited capacity to plan and limited weight for advocacy.
- Limited literacy and numeracy skills amongst the poorest.
- Conflict of interest between long-term sustainable use and the immediate needs of the poor and ambitious.
- Limited infrastructure and inputs along the value chain.
- Limited banking services and financial institutions.
- Lack of alternative livelihood sources.
- Lack of seeds and feeds for aquaculture production

District governments are ill-equipped to meet their mandates and communities are similarly challenged. Neither level has the capacity to ensure sustainable use of fisheries resources and improvement of fisheries livelihoods. Moreover, under the current state of

weak management capacity, communities cannot take direct responsibility for major issues such as encroachment by foreign nationals, and emergencies (fish poisoning outbreaks or disease epidemics in aquaculture).

BMU Committees Roles and Challenges

The BMU is a legally empowered CBO under the Fish (Beach Management) Rules (2003). The legislation requires BMUs to be formed at all gazetted landing sites. All fisheries stakeholders must register with a BMU to operate legally. Each BMU has a committee and an assembly that includes all registered members of the BMU; members of the BMU elect the BMU executive committee for a fixed term.

The Government of Uganda’s “Guidelines for Beach Management Units” supplement the Rules, detailing how to establish and run a BMU. For example, the BMU committees must ensure that all stakeholder groups are represented. Hence, the BMU committee composition is: 30 percent fishing crew (individuals who do not own a boat), 30 percent boat owners, 30 percent others (fish processors, boat makers, local gear makers, and so on), and 10 percent fishmongers. Additionally, 30 percent of total membership must be female, wherever possible.

Table 10.2 Beach Management Unit (BMU) Challenges

BMU roles	Constraints to performing the roles
<ul style="list-style-type: none"> • Register all boat owners, fishermen, and their equipment. • Collect fisheries data for management and planning purposes. 	<ul style="list-style-type: none"> • Inadequate capacity—most are elected from the communities and lack training. • At the end of each electoral term, a new BMU committee requires capacity building.
<ul style="list-style-type: none"> • Ensure that licenses for fishers and vessels are issued with designated authorized licensing officers. • Ensure safety guidelines for fishing are in accordance with the fisheries laws. • Enforce Fisheries Quality assurance rules. 	<ul style="list-style-type: none"> • Fisheries stakeholders fail to register leading to illegal activities and revenue loss. • Illegal activities in areas too remote to reach quickly or regularly. • Fishermen are migratory and move after contact with law enforcers. • Corruption by those holding BMU positions. • Conflict between BMUs and Marine Police and District Fisheries Officers.

Source: Based on Matovu (2011).

Each BMU is linked to a parish. They work with the District Fisheries Officer, with assistance from local council leaders, parish chiefs, and marine police. In accordance with the Rules and Guidelines, the BMU committee performs the duties listed in table 10.2. The constraints to their performance are generally linked to insufficient capacity and corruption.

The BMUs are on the frontlines of fisheries management. Originally they were to be supported by lakewide umbrella organizations—federated structures of community user groups. These are considered critical for fisheries management because they strengthen the ability of BMUs to influence lakewide decisions, local government planning, and even national policy, legislation, and programs (Nunan 2006). However, the lakewide organizations have not been funded or staffed consistently, and are consequently

ineffective, and provide no support to individual BMUs in terms of dealing with migratory fishermen, or negotiating with local and central governments.

10.7 Aquaculture in Uganda

Overview

Fish farming was introduced in Uganda during the 1950s as a strategy to boost production from capture fisheries and improve the nutritional status of the population (NEMA 2008). With the political instability from the 1970s to mid-1980s, aquaculture virtually collapsed and most fishponds were abandoned. In the late 1980s aquaculture started to increase.

Data on the status of fish farming in Uganda is inconsistent. Data from the Food and Agriculture Organization (FAO) show that production increased from 10,000 tonnes in 2005 to over 50,000 tonnes by 2009. Other information provided by the FAO indicates that in 2005 there were an estimated 20,000 ponds having an average surface area of 500 square meters (m²) per pond. Productivity was ranging from 1,500 kg/ha/yr for small-scale farmers to 15,000 kg/ha/yr for emerging commercial fish farmers.

There are three types of aquaculture practiced in Uganda, differing according to market, type of farmer, and contribution to overall fish production. Sixty percent of fish farmers are subsistence, with few inputs and dependent on the public sector for seed and advice. Small-scale fish farmers (2,000+) produce for income as well as for the household, and are important for the rural economy; they have adopted the use of quality fish seed and feed. The emerging large commercial farmers (200+) are business ventures to sell only into high-paying markets.

The main players in the fish and aquaculture include private individuals, companies, fish export association, nongovernmental organizations (NGOs), CBOs, and LG. Fish farmers have mostly focused on farming tilapia and catfish.

The government has invested in aquaculture through recruitment and training of aquaculture extension and research staff, provision of aquaculture extension services, establishment of fingerling production centers, and the establishment of aquaculture research centers (NEMA 2008). The investment has improved aquaculture hatchery productivity, fishpond profitability, quality control, genetics, and production systems.

Potential for Aquaculture

MAAIF's National Aquaculture Development Strategy is to increase, by 2015, small-scale aquaculture fourfold and large-scale aquaculture fivefold. Production projections vary: 100,000–150,000 tonnes by the 2014–17 period. Whatever may realistically occur, the Aquaculture Strategy includes investment in improved planning and evaluation, mechanisms for cost sharing, establishment of aquaculture parks, and capacity building in terms of farmer training in operations and maintenance.

A study of Uganda's potential for aquaculture found that it is a technology with good potential in certain areas of the country, and that it should be pursued as a potential development pathway to improve rural livelihoods and increase food security. Jagger and others (2001) used biophysical criteria to assess the country's potential for small-scale aquaculture (water availability for shallow ponds, soil and terrain characteristics, and so

on) and found that Uganda is very suitable for fish farming. The caveats to that assessment related to proximity to markets, intermediaries for marketing fish, and the costs of farm-level inputs. Labor in particular is a costly input because successful fishpond investments have high labor requirements. Hence, fish farming is more attractive in areas where wage rates are low. The cost and availability of fry and feed is also a key factor determining fishpond profitability. Fry production centers that are accessible to fishpond farmers would lower input costs. In remote areas where market access is difficult or costly, or where fish prices cannot cover input costs, fish farming is likely to remain subsistence.

The study noted that the establishment of ponds in the fringes of wetlands is a potential opportunity to fish farmers. But the potential negative externalities may outweigh the benefits of such operations. Nonetheless, it is a possibility worthy of consideration in the development of Community-Based Wetland Management Plans (CBWMPs) (chapter 9).

Trends in Fish Farming

According to the FAO data, fish farming in Uganda has experienced impressive growth. It languished at around 5,000 tonnes/yr during 2000–04; then, by 2009 it had jumped to over 50,000 tonnes. A comparison of aquaculture production in 2005 for selected African countries showed production levels in Uganda and Tanzania to be very similar, ranging from 6,000 to 7,000 tonnes; and Kenya was the lowest producer with only a reported 1,000 tonnes (Rutaisire and others 2008). More recent (FAO) data for Kenya show it to be producing just over 4,000 tonnes in 2007; while Tanzania's aquaculture production is close to 8,000. With Uganda at some 50,000 tonnes, relative to its neighbors, it is making considerable headway.

Challenges Facing Fish Farming

The overall challenge for fish farming is to take pressure off capture fisheries, by contributing enough to national fish production to meet domestic fish demand and maintain exports. The MSY of capture fisheries might be around 320,000 tonnes/yr. Domestic demand is already above that level at 352,000 tonnes, and it will increase to about 375,000 tonnes by 2015. The current level of aquaculture production is 50,000 tonnes. If capture fisheries are to be protected, domestic demand met, and some level of exports maintained, aquaculture production needs to essentially double by 2015.

Despite the apparent impressive expansion in Uganda's aquaculture in recent years (staying mindful of data reliability concerns), government sources indicate that the sector is flagging. According to MAAIF (2010a), commercialized aquaculture is advancing slowly. The following factors have been identified as underlying the apparent industry inertia:

- Lack of clear aquaculture policies and strategies.
- Insufficient technical information (feeding, stocking, water use management).
- Insufficient investor interest.
- Inadequate structures for commercialization.
- Insufficient equipment and quality seed and feed.
- Inadequately diversified aquaculture production systems (pond, tanks, cages, raceways)
- Emergence of diseases.
- Insufficient access to credit.

Other probable challenges to the industry that should be investigated are those related to market conditions: access to markets, fish product prices, and input prices.

10.8 Government Initiatives to Address Fisheries Challenges

MAAIF DSIP (2010–11 to 2014–15)

In response to the threats facing the fisheries sector, the current MAAIF Development Strategy and Investment Plan (DSIP MAAIF 2010) provides for the creation of a Directorate of Fisheries Resources. Within this Directorate, a new Fisheries Regulatory Service Department is to be established to enhance the sustainability of fisheries stocks, and to increase the quality of fish and fish products.

The DSIP is to reduce pressure on capture fisheries by strengthening controls on illegal fishing, promoting aquaculture, and stocking small water bodies. To strengthen institutions for the better enforcement of regulations, investment will:

- Build capacity of fisheries staff in regulation and enforcement.
- Promote fisheries licensing and quotas in all water bodies.
- Provide incinerators for illegal fishing gear.

To improve quality, components to strengthen inspection systems and institutions for the better enforcement of standards and quotas, the DSIP will:

- Invest in infrastructure: laboratories and handling equipment for BMUs.

The DSIP is particularly concerned with improving value-added infrastructure for fisheries. The current substandard infrastructure and quality control regulations constrains the development of the industry.

Maintaining Exports to the European Union

Uganda is signatory to international conventions for food safety standards, and the country's laws and rules have been revised to ensure adherence to international norms. The Fish Quality Assurance Rules were formulated in 2012.

Between 1997 and 2000, Uganda experienced a series of fish export bans to the European Union (EU) because of issues related to fish quality and safety (salmonella, vibrio cholerae, pesticides). The effect of these bans caused large negative impacts on the economy in terms of reduced foreign exchange inflows, unemployment, and overall lowered income among fisherfolk throughout the supply chain. In response, the DFR instituted safeguard measures and guarantees that were subjected to verification by the EU Food and Veterinary Office (FVO) Inspection. The last ban was lifted in 2001.

Having demonstrated credible due diligence in meeting the equivalency conditions of the EU, Uganda was posted on the list of Third Countries (non-EU-exporting countries). This position has been maintained, and is the one of the strong pillars for export of fish and fishery products to the EU. Since 2001, the DFR has been subjected to two FVO Inspection missions, the latest in May 2011. Both missions found that Ugandan fishery products meet the equivalency of EU market requirements and measures.

Regarding aquaculture fisheries, in March 2009 the DFR submitted to the EU the National Residue Control Plan and the results of Residue Monitoring plans, for EU consideration of Ugandan aquaculture products. This submission was approved under the EC Commission Decision 2004/432/EC of June 11, 2010. Hence, Uganda is now among the list of Third Countries allowed to export fish and fishery products to the EU from both capture (2001) and aquaculture (2010).

Interventions to Boost Productivity

To increase production and productivity, strengthen the declining capture fishery stocks, and provide food security and employment in rural communities, the DFR has adopted a number of interventions that include:

- Restocking of community dams and small water bodies.
- Promotion of intensive fish farming methods, notably cage fish farming on main water bodies.
- Promotion of aquaculture parks.
- Promotion of pelagic fisheries on Lake Victoria and Lake Albert.

Cage fish farming raises concerns of water quality and navigation, and consequently requires interministerial cooperation from key stakeholders, including the MWE and the Ministry of Transport. Also, a draft policy for the establishment of aquaculture parks is in its final stages. This initiative promotes an intensive production system that will have implications for land use, and water supply for production (WfP). This too will require interministerial collaboration among MAAIF, MWE, and the Ministry of Lands, Housing and Urban Development (MLHUD).

Regarding pelagic fish species, the DFR is strongly promoting their sustainable exploitation and processing: mukene (*Rastroneobola argentea*) on Lake Victoria, and ragoge (*Brycinus nurse*) and muziri (*Neobola bredoi*) on Lake Albert. The pelagic fisheries provide a strong raw material base for the feed industry, as well as nutritional value for the vulnerable poor groups among the fishers, namely, women. The intervention includes improved harvesting technologies, postharvest handling, and value addition.

Efforts to Protect Fish Breeding Grounds

The DFR developed statutory instrument No 34: The Fish (Permanent Closed Areas) Rules (2010) to protect fish breeding and nursery grounds on Lake Victoria. This instrument prescribes the latitudes for gazettment of these areas. However, actual gazettment has not yet been undertaken. In the event that it is eventually undertaken, the process will require collaborative efforts, particularly with MWE.

Other Initiatives

Basic initiatives to address legislative and regulatory gaps in the fisheries sector have been started, but have yet to reach fruition. The Fisheries Bill (2004) contains provisions to update the current regulations on fish product production, but it is still under review. The Government of Uganda with support from DPs established the Uganda Fisheries Laboratory for quality control of inputs and outputs. The aim was to support certification

of quality and safety of fish and fishery products for export. But because of inadequate equipment and personnel, the laboratory has not yet received accreditation.

Agricultural Technology and Agribusiness Advisory Services (ATAAS) Project

A component of the World Bank and Global Environment Facility (GEF)-supported ATAAS project will invest in relevant technologies, practices, and strategies for agricultural development. It will support the National Agriculture Research Organization (NARO) and National Agriculture Advisory Services (NAADS) in the implementation of the National Agricultural Research Program (NARP). Over a 5-year period, it will invest in the human, financial, infrastructural, and organizational capacity of the National Agricultural Research Institutes (NARIs) and the Zonal Agricultural Research and Development Institute (ZARDIs). The National Agricultural Research Strategy (NARS) will be improved through regular updating of priorities, with NAADS and other stakeholders.

Capture fisheries and aquaculture (Nile perch, tilapia, and catfish) is a research priority for the NARP. As such, a research program is to be coordinated by a NARI. ZARDIs, which are to establish linkages with the Districts, will coordinate support for zonal priorities related to capture fisheries and aquaculture. Project outcomes for the project period include 14 fisheries demonstration projects addressing issues of management, postharvest, and value addition. Pelagic fisheries, a priority of the DFR, are not included in the ATAAS project.

10.9 Recommendations to Improve Fisheries Management

Increase Support to Fisheries Co-management Structures

Uganda's adoption of fisheries co-management is consistent with other fisheries management institutions in the East African Community (EAC) and elsewhere that have realized that the best way to safeguard fisheries resources is to empower the users with rights and responsibilities, and bring them into decision making and planning. But there are critical criteria for sustainability and effectiveness of the approach that includes, among other things, adequate financial and management capacity, and participation in a federated structure of community groups for lakewide management.

➤ Management and financial capacity within BMUs needs to be improved.

The understanding of co-management among the different stakeholders, and the role of the individual BMUs, is low. Building management capacity also includes strengthening the capacity of BMUs to generate revenues, and integrating BMUs into local planning and development processes. Local government support to BMUs should be strengthened and BMUs should have better access to the NAADS program.

➤ A supported lakewide approach to co-management is needed.

Uniting the BMUs into Lake Management Organizations (LMOs) is necessary for coordinated and effective lake management. It permits capacity building because it provides a forum in which the BMUs can share experiences and lessons learned. The LMO, which brings together local-level organizations, strengthens and empowers community members through interconnected lakewide planning, and regular meetings that report on activities and outcomes. It strengthens legitimacy and accountability to both the individual BMUs and the LMO to the local people. In Uganda the lakewide approach with its LMOs

have not been adequately supported on the non–Lake Victoria lakes. A strategy to ensure financial, managerial, and technical support for their functioning needs to be developed.

Enable Capacity with Funding

The MAAIF Public Expenditure Review (World Bank 2010b) indicates that of the 2008–09 MAAIF recurrent budget, about \$1 million went to DFR. Fisheries income in 2009 was about \$440 million, which includes estimates of illegal trade. The costs of fisheries management in countries with a high level of self-governance and management cost-recovery are around 4 percent of landed catch value. In Uganda where self-governance and cost-recovery is still developing, fisheries management is only about 0.2 percent of production value. A strategy to improve funding to the sector so that it can build capacity in its co-management structures needs to be formulated.

Data and Information to Inform Policy and Investment

In Uganda’s non–Lake Victoria fisheries, one issue resounds: the lack of data and information. The issue handicaps policy, planning, and investment strategy. It also obscures the impacts on the country’s wealth, as fisheries profits fall to zero or less, and lake resources are depleted. With reliable information and analysis, policy objectives can be reviewed, and legislation can be revised accordingly.

A road map, whereby eventual dedicated investments are predicated on sound analysis and clarity in policy objectives would look like the following:

A. Data and analysis to support policy and planning

In non–Lake Victoria capture fisheries:

- Conduct Frame and Catch Assessment surveys to acquire up-to-date data and information.
- Identify and rank lakes at risk to environmental degradation and overfishing.
- Identify fish species at risk.
- Determine the biological constraints to productivity of the lake systems.
- Determine current, and evolution of, fishing efforts, incomes, and expenses.
- Identify any direct or indirect subsidies to the fishing sector.
- Identify institutional or market failures affecting production decisions.

In aquaculture fisheries:

- Analyze production costs and market conditions for different scales of operations.
- Identify government programs and evaluate their impacts on the sector.
- Identify institutional or market failures affecting production decisions.

B. Policy scenario development and evaluation

With data and preliminary analyses in hand:

- Develop policy options (scenarios) for management of non–Lake Victoria fisheries.
- Conduct bioeconomic modeling of lake systems under different policy scenarios.
- Evaluate the effects on rural livelihoods and national fisheries wealth under each scenario.
- With respect to aquaculture, evaluate options for removing identified constraints to aquaculture production.

C. Policy review and revision of objectives

Review the Fisheries Policy (2004) in light of the preferred policy scenario, the choice of which is based on the evaluations of different policy scenarios. Revision of objectives will include consideration of, for example:

- Level of fishing effort: maximizing fish production or profit? MSY or MEY?
- Subsidization of fisheries sector.
- Promotion of alternative livelihoods in fishing communities.
- Improvement of co-management structures.

D. Revision of law and legal framework

- Legislation made consistent with the objectives of (a revised) Fisheries Policy.

E. Implementation of dedicated investments in capacity building and infrastructure

Dedicated investments could include, for example:

- Capacity building to the BMUs and CBOs to assist them in undertaking their roles.
- Monitoring, control, and surveillance equipment to the BMUs and LGs.
- Capacity building to lakewide structures to promote coherence and coordination of the BMU and LG efforts.
- Development of alternative management arrangements for landing sites, such as private-public partnerships (PPPs) of facilities.
- Development of alternative livelihoods in fishing communities.
- Development and implementation of strategies to reduce postharvest losses.
- Public awareness building about health regulations for fisheries production.

Section IV. Moving Forward

Moving Forward draws on the institutional and governance information, and the current Environment and Natural Resources (ENR) sector management initiatives presented in section III, to derive a list of recommended actions for improved ENR governance in Uganda (table 11.1). Moving forward also discusses how the Government of Uganda's Development Partners (DPs) could advance Uganda's ENR agenda.

Chapter 11 starts with a quick summary of government initiatives to address the country's ENR challenges that were discussed in chapter 7. It then goes on to summarize the constraints to forward movement on ENR issues. It concludes with a list of potential actions that the Government could undertake to relieve certain constraints to effective and decentralized ENR management. By undertaking a combination of these actions, the Government of Uganda could send a signal to the Bank and the other DPs that it is keenly interested in addressing its ENR challenges.

Chapter 12 examines the current activities of the World Bank and DPs in Uganda's environment sector. The goal is to identify Bank interventions that would mesh with Uganda's development and ENR priorities, and coincide with the Bank's assistance strategy for Uganda. The chapter closes with a discussion of potential Bank initiatives in the areas of environmental governance, forestry, wetlands, fisheries, and pollution. A list of current Bank ENR projects is provided in table 12.2. A list of current ENR projects by other DPs is provided in table 12.3.

Chapter 11. Institutional Framework for Environmental Management

Main Messages

- *Unambiguous political leadership for Environment and Natural Resources (ENR) sustainable management is needed.*
- *Transparency, accountability, and public participation need to be increased.*
- *ENR financing needs to be increased and reliable.*
- *Overdue legislation needs to be addressed.*
- *Innovative financing mechanisms such as the Payment for Ecosystem Services (PES) and Reducing Emissions from Deforestation and Forest Degradation (Plus) (REDD+) should be pursued.*
- *The Ministry of Water and Environment (MWE) has initiated key activities to improve ENR management, and promote synergies between the ENR and Water Supply and Sanitation (WSS) subsectors.*
- *MWE and the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) are developing mechanisms to improve collaboration.*

11.1 Forward Moving Initiatives

Chapter 7 provided information on how the Government of Uganda is responding to the governance challenges raised in chapters 3 to 6 ranging from legal and institutional gaps and funding constraints, to political interference and concerns about oil sector development. The many initiatives in chapter 7 indicate that the Government of Uganda and, particularly the Ministry of Water and Environment (MWE), are trying to move forward an Environment and Natural Resources (ENR) agenda that will improve ENR management, despite various constraints. The following encapsulates the major initiatives discussed in chapter 7.

An *institutional review* has been commissioned by MWE to improve the performance of the ENR subsector. The ambitious undertakings of the Joint Sector Reviews (JSR 2009, 2010) seek to create synergies between the ENR and water supply and sanitation (WSS) subsectors, and harmonize roles and responsibilities within MWE, the National Environmental Management Authority (NEMA), and Local Government (LG) ENR departments. The review work is supported by the Danish International Development Agency (DANIDA).⁵⁷

The Government of Uganda is working to reduce *vulnerability to climate change* and variability by developing a climate policy, a communications strategy, and improving disaster preparedness. The climate change unit within MWE is established but has few resources. Some communication outreach has occurred, and a draft Climate Change policy is to be developed by FY2011–12. A Disaster Risk Reduction and Management Policy has been developed, but suffers from significant implementation constraints.

Improving *water supply* is a priority for both MWE and the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF). MWE has a strategic plan for WSS, part of which is a water

⁵⁷ SKAT Consulting, Switzerland, leads the research that started in late 2010.

resources assessment, done in 2010. The implementation of an Integrated Water Resource Management (IWRM) strategy started in 2011. To improve the supply of water for production (WfP), MWE and MAAIF are developing collaboration mechanisms, starting with a memorandum of understanding (MOU) between MWE and MAAIF. The Bank is currently finalizing a Uganda Water Country Assistance Strategy (CAS).

Sustainable land management (SLM) has become a serious undertaking of MAAIF. A SLM strategy has been developed, and an MOU establishing an Inter-Ministerial Cooperation Framework (IMCF) has been signed between MAAIF, MWE, the Ministry of Energy and Mineral Development (MEMD), and the Ministry of Lands, Housing and Urban Development (MLHUD). The SLM Strategy is part of the Agriculture Sector Development Strategy and Investment Plan (AG DSIP), and the associated Agricultural Technology and Agribusiness Advisory Services (ATAAS) project is supported by the Global Environment Facility (GEF) and other Development Partners (DPs).

Attention to *environmental pollution* is moving ahead on some fronts, and not at all on others. NEMA has started to deal with the issue of chemical pollution. A situational report has been done, and a program to handle farm use of pesticides has been proposed. Municipal solid waste is addressed by a Clean Development Mechanism (CDM)-approved Programme of Activities (PoA) composting project that is attracting an increasing number of interested municipalities. The development of air quality regulation is underway, supported by the World Bank's Environmental Management Capacity Building Project II (EMCBPII).

Indoor air pollution, on the other hand, is not addressed by the government, in spite of the associated heavy health costs, and the consequences for the nation's forests. There is no clear mention of it in the Energy Policy, although the National Development Plan (NDP 2010) promotes energy-efficient stoves as a strategy to reduce pressure on forest resources. Currently, nongovernmental organizations (NGOs) are the most active in promoting less polluting and more energy-efficient cook stoves, but with apparently little support from DPs other than GIZ.⁵⁸

In the *wetlands and forestry* sectors, a boundary demarcation and classification strategy is being formulated to improve the legal basis for protection of these resources. It is a coordinated effort between, primarily, the Wetlands Management Department (WMD), Forestry Sector Support Department (FSSD), and National Forestry Authority (NFA), with input from the Uganda Wildlife Authority (UWA), NEMA, Uganda Land Commission, Survey and Mapping Department, and Ministry of Justice. The Strategy will need to be able to deal with issues of land negotiation (particularly in the case of wetlands), compensation, tenure arrangements, and classification. It will be a complicated undertaking that can be stalled or abused if not well designed and supported unambiguously by the political leadership. The initiative receives support from DANIDA.

Addressing the *forestry* debacle, the MWE commissioned a sector review to identify ways to improve governance and management. The performance of the key institutions (FSSD, NFA, the District Forestry Services [DFS]) was examined, the constraints to their performance

⁵⁸ German Society for International Cooperation, formerly GTZ.

were identified, and recommendations to address the problems were provided. The review was supported by the Norwegian Agency for Development Cooperation (NORAD). MWE is also moving ahead on the eventual formulation of a REDD+ Strategy. The REDD Readiness Preparation Proposal (R-PP) has been submitted with support from the Bank and NORAD.

To improve *compliance with environmental laws*, an Environmental Protection Force of some 600 officers started working with NEMA to monitor wetlands and protected forest reserves in July 2011.

Oil and gas sector development is proceeding with assistance from the Norwegian Oil for Development Program. The biggest public concern is transparency and disclosure. There are provisions in the National Oil and Gas Policy (2008) for transparency, and they go so far as to promote national participation in the Extractive Industries and Transparency Initiative. But the associated draft Petroleum Bill is criticized for being inconsistent with the policy and essentially more secretive than transparent.

Environmental Impact Assessment (EIA) capacity in the country is weak, and at the same time under great pressure to perform, given the rapid pace of oil sector development. Review work over a 5-year period indicates that the quality of EIAs is not increasing. There are important deficiencies ranging from inadequate baseline data and mitigation measures, to monitoring plans that are unclear about what should be monitored and who should be doing the monitoring. There is inadequate public participation, despite provisions in the National Environmental Act (NEA) that encourage it.

EIA capacity-building initiatives are underway. Led by the NGO Wildlife Conservation Society, EIA training courses (for oil and gas projects) were developed and are being delivered to interested EIA practitioners, government officials, and members of civil society. The World Bank is also involved in EIA capacity building through the EMCBPPII project.

Civil society organizations (CSOs) in Uganda are numerous, articulate, and active. They are involved in every aspect of the ENR sector. The MWE invited their participation in the ENR Sector Performance Review (SPR), and they have lobbied the World Bank to strengthen its involvement in the promotion of good governance and combating corruption.

11.2 Constraints to Forward Momentum

Chapters 3 to 6 described the constraints to good governance of the ENR subsector. The major constraints identified are the following:

- Political interference and corruption.
- Inadequate transparency and accountability.
- Inadequate financial resources to MWE and LGs for ENR management.
- Inadequate human capacity especially at LG levels.
- Insufficient community participation in management.
- Legislative gaps and mandate overlaps.
- Bureaucratic delays and indecisiveness.

Political interference and corruption are repeatedly identified as a major constraint to ENR policy implementation. The legislative framework to combat corruption exists, but it needs to be taken seriously with adequate funding and unambiguous and consistent political

support. The Government of Uganda has taken steps to improve the accountability of the public service through its Public Service Reform Programme (PSRP). Emphasis has been placed on the establishment of a performance management system. It would be useful to examine how or if the PSRP treats issues of ENR mainstreaming and management.

To move forward, the political leadership must be publicly, unambiguously, and consistently behind sustainable resource management objectives. The 2006 Presidential Directive banning evictions, whatever may have been its original intent, was widely interpreted as a green light for encroachment. To improve the functioning of the ENR legal and institutional structure to protect natural resources, that directive needs to be unambiguously retracted.

Inadequate transparency and accountability allows corruption and political interference to thrive. The NDP (2010) acknowledges that public sector management is weak and corruption is rife. There is an anti-corruption institutional framework, but its functioning is weak, primarily due to inadequate funding. Provisions of the Access to Information Act have not been implemented. Corruption is pervasive in procurement activities, and conflict of interest in government contracting is a fundamental problem.

Increasing transparency and accountability requires a number of actions that would facilitate public involvement in and scrutiny of natural resource use decisions. Chief among them is increasing the availability of and access to information. *Public participation* in natural resource use decisions—both by citizens and local government officials—needs to be facilitated. Procedures to ensure public and district effective participation in EIAs, for example, need to be developed. *Mechanisms for conflict resolution*, between citizens and government, and between different levels of government, need to be developed.

Funding is essential to move forward on ENR challenges. The Government of Uganda needs to demonstrate its commitment to both the NDP (2010), and the environment by strengthening MWE and local governments with increased and reliable ENR funding. With more resources, the MWE and LGs could start pursuing sources of innovative financing, such as PES and REDD+ funds. A means for increasing reliable funding to the ENR office is through the creation of a ring-fenced ENR conditional grant, or through earmarking for ENR a percentage of non-ENR sector budgets for environmental mainstreaming.

Limited human capacity severely constrains the performance of LG ENR departments, which are on average operating at about 50 percent of the recommended staff capacity. LG ENR staff is sometimes not paid. The Ministry (MWE) is also operating well below the recommended staff capacity, but the situation is not as dire as it is at the district levels, which is becoming worse with every new district that is created.

LGs are ultimately responsible for national ENR policy, under decentralization. However, they cannot do their job or implement projects because the budget is small; and if budget is allocated at the beginning of the year, there is no guarantee when or if it will be received. There is little support from the line ministries, and insufficient local administrative and political support for conservation initiatives. Local ENR public servants are often demoralized, and the sector has difficulty attracting and keeping qualified people.

Central and local political leaders need to be unequivocal in their support of natural resource management objectives. Adequate funding for ENR so that staffing is improved

and mandates can be realized would attract competent people and rejuvenate the sector. With adequate funding and staffing, performance measures will have more meaning. When staff is trying to fill two or three or more positions at the same time, judging their performance against the mandates of all the positions is unjustifiable.

Community participation in ENR management needs to be increased. A strategy to expedite the adoption of Collaborative Forest Management (CFM) agreements should be formulated and implemented. Financial support that sustains Community-based Wetland Management Planning (CBWMP) processes through to their completion needs to be assured. Co-management structures in the fisheries sector require strengthening, and particularly the lakewide organizations.

Legislative gaps at the national level include the lack of a Land Use Policy, and a transparent system of land tenure. Both are repeatedly mentioned as constraints to natural resource management. A Wetlands Bill is awaiting approval, as are long overdue forestry regulations and guidelines. Updated fisheries legislation has been stalled since 2004. Other regulatory issues relate to sanctions. Current penalties for environmental degradation are not sufficient to deter moneyed offenders, and need to be reviewed to improve effectiveness. Moving forward requires decisive action on these key legislative items.

Moving forward in *forestry* requires clarifying the mandates of the sector's three institutions (FSSD, NFA, DFS), and ensuring that they are equipped with appropriate human and financial capacity for, among other things, effective collaboration. The NFA needs to assess its financing strategy in terms of the efficiency of its operations in the private sector, and the effectiveness of its economic instruments in meeting forest management objectives.

Linkages between the central and local governments do not foster technical capacity support and information exchange. With decentralization, the role of line ministries is to mentor and monitor. Little of that is happening, the result of which is a mismatch between national plans and local delivery. The flow of ENR information and support between the center and district environmental officers is not systematic, prompting concern about the reliability and maintenance of national ENR databases.

11.3 Government Actions to Improve ENR Management

Table 11.1 provides a list of short- to medium-term government actions to lessen the constraints on ENR management, and improve governance in the sector.

Table 11.1 List of Actions for Improved ENR Governance in Uganda

Issues	Proposed actions	Type Partner(s)
Environment and natural resource sector		
Political commitment	<ul style="list-style-type: none"> An “environment policy statement” that unambiguously commits political leadership to sustainable management of ENR and respect for national ENR laws. 	President’s Office/MWE
	<ul style="list-style-type: none"> Develop awareness campaign on ENR issues, policies, and laws, for both public and private sectors. Public declaration of a strengthened policy of transparency and accountability in ENR. 	Investment MWE, MTTI, MAAIF/MLHUD
Policy and legislation	<ul style="list-style-type: none"> Harmonize and clarify ENR mandates and accountability structures of MWE, NEMA, local governments, and police. 	Policy/TA DEA/MWE
	<ul style="list-style-type: none"> Recast the ENR SIP to make it an effective instrument for planning and resource mobilization. 	TA DEA/MWE
	<ul style="list-style-type: none"> Reexamine draft Petroleum Legislation for consistency with the Petroleum Policy. 	Policy MEMD
	<ul style="list-style-type: none"> Finalize the SEA for oil development in western regions. 	Investment MWE/MEMD
	<ul style="list-style-type: none"> Finalize the Land Use Policy. 	Policy/TA MLHUD/others
	<ul style="list-style-type: none"> Develop a Rangeland Policy and Strategic Plan 	MWE/MAAIF/MLHUD
	<ul style="list-style-type: none"> Finalize the draft Climate Change Policy Revise the Energy Policy to include objectives to reduce pressure on forest resources. 	Policy and TA MWE Policy and TA MEMD/MWE
Transparency and accountability	<ul style="list-style-type: none"> Implement provisions of the Access to Information Act. Ensure adequate funding to anti-corruption agencies. Develop a strategy to reduce conflict of interest in government procurement. Develop an outreach program to increase public awareness strategy on the ENR policies, laws, and opportunities for public participation in the ENR management decisions. 	Policy/TA Investment JLOS
	<ul style="list-style-type: none"> Develop a GGA Plan for the ENR sector, drawing lessons from the WSS GGA Plan. 	TA MWE
Conflict resolution	<ul style="list-style-type: none"> Establish clear procedures for ENR conflict resolution for citizens and ENR officials. Assess the success of the WPC in handling water resource conflicts; consider similar model for other ENR issues. 	TA/Investment MWE
	<ul style="list-style-type: none"> Establish mechanisms to ensure involvement of affected districts in land-use decisions. 	Policy MOLG/UIA/MWE
Financial capacity	<ul style="list-style-type: none"> Develop a strategy for establishment and utilization of a National Environment Fund. 	Policy/TA MWE/MFPED
	<ul style="list-style-type: none"> Establish conditional and protected ENR grants for districts and associated strategy for their timely disbursement. 	Policy/TA MFPED/MWE/MLOG

Issues	Proposed actions	Type Partner(s)
Central management capacity	<ul style="list-style-type: none"> Establish a restructured SPMF for the ENR subsector. 	Policy MLOG
	<ul style="list-style-type: none"> Identify pilot projects that demonstrate and promote the ENR and WSS synergy. 	Investment MWE
	<ul style="list-style-type: none"> Develop strategy to increase capacity of the Climate Change Unit to meet the objectives of the Climate Change Policy. 	TA MWE
	<ul style="list-style-type: none"> Strengthen capacity of the DOM to deliver local weather and climate services. 	Investment MWE/MAAIF
Decentralized management capacity	<ul style="list-style-type: none"> Reinforce decentralized ENR management by improving line ministry links to district ENR departments. Provide capacity to RTSUs for wetlands, WfP, and IWRM. 	Investment MWE/MOLG
EIA capacity	<ul style="list-style-type: none"> Build capacity of EIA practitioners within and outside the Government. 	Investment MWE/CSOs
	<ul style="list-style-type: none"> Formalize processes for public consultation and participation, as per the EIA legislative provisions. 	Policy and TA DEA/MWE/others
	<ul style="list-style-type: none"> Establish the EIA processes that will inform project <i>design</i>. 	Policy DEA/MWE
Intersectoral collaboration	<ul style="list-style-type: none"> Develop nascent collaborative mechanisms between the MWE and other ministries (for SLM and water supply). 	Investment MWE/MAAIF/MLHUD/ others.

Forestry		
Political commitment	<ul style="list-style-type: none"> Establish the NFA Board using the transparent procedures originally developed for that purpose. 	President's Office DEA/MWE
Legislation and policy	<ul style="list-style-type: none"> Expedite Forestry Regulations of the NFTP. Clarify user rights associated with forested land. Implement Demarcation Strategy complete with an accompanying GAC Plan. 	Policy Investment MWE/MOLG/LGs
Transparency and accountability	<ul style="list-style-type: none"> Enhance data capture, reporting, and dissemination systems, from local to national levels. Develop strategy to improve public awareness about forestry policy, laws, and opportunities for public participation in local forestry management. 	Investment FSSD/DFS/NFA
Forestry management capacity	<ul style="list-style-type: none"> Conduct a capacity needs assessment to identify critical capacity constraints in the FSSD and DFS, as per the REDD R-PP. Develop GAC Action Plan to accompany institutional reform strategy. 	Investment MWE
	<ul style="list-style-type: none"> Finalize guidelines for the DFS to aid private forest management. 	Investment MWE/LGs
	<ul style="list-style-type: none"> Develop guidelines for conflict resolution. 	
Community engagement	<ul style="list-style-type: none"> Review and revise procedures for establishing CFM agreements. Expand the coverage of CFM sites. 	Policy and Investment MWE
	<ul style="list-style-type: none"> Expedite FMPs awaiting Ministerial approval, to facilitate the finalization of CFM agreements. 	Policy MWE
Forestry financial capacity	<ul style="list-style-type: none"> Evaluate financing possibilities and develop financial strategy for NFA. 	TA and Investment FSSD/NFA/DFS MFPED
	<ul style="list-style-type: none"> Review levels and effectiveness of district reinvestment of forestry revenues in forestry. 	
	<ul style="list-style-type: none"> Develop the REDD+ Awareness and Communications Strategy for political leadership, public service, and private sectors. 	
Economic efficiency	<ul style="list-style-type: none"> Assess for efficiency revenue instruments of forestry sector: stumpage fees, taxes, leasing arrangements. Identify candidates for PES arrangements. Expedite technical guidelines for certification scheme. 	TA MWE
Intersectoral coordination	<ul style="list-style-type: none"> Establish linkages with the MEMD to develop strategies to reduce wood fuel use. Strengthen linkages with the MAAIF for watershed management initiatives such as potential PES arrangements. 	Investment MWE/MEMD

Wetlands		
Political commitment	<ul style="list-style-type: none"> • Issue Wetlands Statement declaring political will to protect wetlands, implement wetlands policy, and enforce wetlands laws and regulations. 	Policy President's Office/MWE
Legislation and policy	<ul style="list-style-type: none"> • Finalize WSSP 2010–20. • Finalize wetlands legislation (regarding National Wetlands Bill). • Implement Demarcation Strategy for wetlands. 	Policy MWE/WMD
Transparency and accountability	<ul style="list-style-type: none"> • Develop strategy to increase public awareness of wetlands policy, Land Act provisions for wetland management, user rights, and wetlands regulations. • Provide a GAC Plan to accompany the Demarcation Strategy process. 	Investment FSSD/DFS
Wetlands data development	<ul style="list-style-type: none"> • Complete data collection and entry for the NWIS and establish system for regular NWIS updating. • Build linkages between existing databases: the NWIS at WMD, EIS at NFA and NEMA, and Land Information System at MLHUD. • Operationalize the NWIS for data analysis and planning across the MWE departments and other sectors. • Build climate change information into wetland database. 	Investment MWE
Wetlands management capacity	<ul style="list-style-type: none"> • Strengthen RTSUs. • Develop capacity for inter-district wetland management. • Review efficacy of environmental sanctions and revise. • Advance completion of District Wetland Action Plans. • Finalize drafted ordinances and bylaws. • Develop strategies to ensure the CBWMP processes are sustained through planning and implementation. 	Investment WMD
Wetlands financial capacity	<ul style="list-style-type: none"> • Establish a Wetland Fund to, among other things, secure the provision of compliance monitoring funds to districts. • Engage the private sector in Corporate Social Responsibility programs. 	Investment WMD/WSS
Economic efficiency	<ul style="list-style-type: none"> • Build on the GEF project to develop methodologies for PES. • Identify opportunities and establish mechanisms for PES with the NWSC and hydropower providers. 	Investment WMD
Intersectoral coordination	<ul style="list-style-type: none"> • Strengthen collaboration between the MWE and MAAIF for WfP. • Integrate wetland issues into collaborative interministerial mechanisms for SLM. • Strengthen links between the WMD and DFR for collaborative opportunities in areas of wetlands/fisheries interface. 	Policy and Investment MWE/MAAIF

Fisheries		
Fisheries data development	<ul style="list-style-type: none"> Strengthen fisheries data capture and reporting systems of the BMUs, lakewide organizations, and districts. Ensure that the types of data captured are sufficient for informed policy formulation and planning. 	Investment DFR/LGs/BMUs
Transparency and accountability	<ul style="list-style-type: none"> Develop public awareness strategy on fisheries policies, laws, and co-management structures and roles. Facilitate federation of the BMUs into lakewide organizations; and integrate the BMUs into local planning activities. 	Investment DFR/LGs/BMUs
Fisheries financial capacity	<ul style="list-style-type: none"> Assess the role of the NAADS in fisheries extension and develop strategy to increase the NAADS input to the sector. Develop a strategy for improved financing of co-management structures. 	Investment MAAIF/DFR
Fisheries policy development	<ul style="list-style-type: none"> Investigate different policy options given the biophysical and socioeconomic parameters of lake systems. Assess policy objectives of existing fisheries policy in light of the results of policy research informed by reliable data. 	TA MAAIF/DFR
Fisheries legislation and policy	<ul style="list-style-type: none"> Revise Fisheries Policy as per agreed fisheries objectives. Develop new fisheries legislation consistent with (updated) Fisheries Policy. 	Policy MAAIF/DFR
Intersectoral coordination	<ul style="list-style-type: none"> Facilitate collaboration between the MWE and DFR, especially for DFR initiatives involving cage fish farming (water quality monitoring issues) and aquaculture parks (land use and WFP issues). Collaborate with DFR on gazettement processes for fish-breeding areas and nursery grounds. Ensure the DFR input into collaborative interministerial mechanisms (MOUs between the MWE and MAAIF agencies). Facilitate wetlands and fisheries collaboration. 	Policy MWE/MAAIF
Pilot projects in lakes at risk	<ul style="list-style-type: none"> Identify water bodies at risk to wetland and catchment degradation stresses. Collaborate with DPs in climate change to identify water bodies and fishing communities at risk to climate change impacts. 	Investment MWE/DFR

Pollution		
Capacity Air pollution	<ul style="list-style-type: none"> Continue to support development of air quality standards and regulations. 	TA MWE
Capacity Water pollution	<ul style="list-style-type: none"> Review water pollution regulations to identify areas of implementation improvement. 	TA NEMA
CDM PoA Solid waste	<ul style="list-style-type: none"> Maintain momentum created by the CDM municipal solid waste management program. 	TA NEMA
Capacity Indoor air pollution	<ul style="list-style-type: none"> Formulate national policy and strategy to reduce dependence on wood fuel. Build on any existing initiatives to promote clean technologies and indoor ventilation improvements. Link indoor air quality and demand for biomass fuel to energy interventions. 	TA/Investment MWE/MEMD
Public awareness Indoor air pollution	<ul style="list-style-type: none"> Develop an education and public awareness program to mobilize networks (health-care centers, NGOs, schools). Build on current initiatives to promote reduced energy technologies and indoor ventilation improvements. 	TA or Grant MWE/MOH

Note: BMU = Beach Management Unit; CBWMP = Community-Based Wetland Management Plan; CDM = Clean Development Mechanism; CFM = Collaborative Forest Management; CSO = civil society organization; DEA = Directorate of Environment Affairs; DFR = Department of Fisheries Resources; DFS = District Forestry Services; DOM = Department of Meteorology; DP = Development Partner; EIA = Environmental Impact Assessment; EIS = Environmental Impact Statement; ENR SIP = Environment and Natural Resources Sector Investment Plan; FMP = Forest Management Plan; FSSD = Forestry Sector Support Department; GAC = Governance and Anti-Corruption; GEF = Global Environment Facility; GGA = Good Governance Action; IWRM = Integrated Water Resource Management; JLOS = Justice, Law and Order Sector; LG = local government; MAAIF = Ministry of Agriculture, Animal Industry and Fisheries; MEMD = Ministry of Energy and Mineral Development; MFPED = Ministry of Finance, Planning and Economic Development; MLHUD = Ministry of Lands, Housing and Urban Development; MOH = Ministry of Health; MOLG = Ministry of Local Government; MOU = Memorandum of Understanding; MTTI = Ministry of Tourism, Trade and Industry; MWE = Ministry of Water and Environment; NAADS = National Agriculture Advisory Services; NEMA = National Environmental Management Authority; NFA = National Forestry Authority; NFTP A = National Forestry Tree Planting Act; NGO = nongovernmental organization; NWIS = National Wetland Information System; NWSC = National Water and Sewerage Corporation; PES = Payment for Ecosystem Service; PoA = Programme of Activities; REDD = Reducing Emissions from Deforestation and Forest Degradation (Plus); R-PP = Readiness Preparation Proposal; RTSU = Regional Technical Support Unit; SEA = Strategic Environmental Assessment; SLM = Sustainable Land Management; SPMF = Sector Performance Monitoring Framework; TA = technical assistance; UIA = **Uganda Investment Authority**; WfP = Water for Production; WMD = Wetlands Management Department; WPC = Water Policy Committee; WSS = Water Supply and Sanitation; WSSP = Wetlands Sector Strategic Plan.

Chapter 12. Possible Environment and Natural Resources (ENR) Agenda for the Bank

Main Messages

- *Any investment in Uganda requires a Governance and Anti-corruption (GAC) Action Plan.*
- *ENR governance initiatives include public awareness and capacity building for Environmental Impact Assessment (EIA).*
- *In continued collaboration with the Development Partners (DPs), the Bank engages in selected forestry initiatives.*
- *A Bank intervention could introduce an integrated management approach to local management of contiguous ecosystems—wetlands, forestry, and water bodies.*

At the Development Partners (DPs) meeting in late 2010, the World Bank expressed its intention to increase its involvement in Uganda's Environment and Natural Resources (ENR) sector. Other donor partners who similarly intend to increase support to Uganda's ENR are the Department for International Development (UK) (DFID), Japanese International Cooperation Agency (JICA), and United Nations Development Programme (UNDP). Denmark and others expressed their intention to stay with current levels of support to ENR sectors. In forestry the African Development Bank will continue the Farm Income Enhancement and Forest Conservation Project (FIEFOC) when it closes in 2012, while Norway is reducing support to that sector. Belgium, who has been providing support to the Climate Change Unit in the Ministry of Water and Environment (MWE), has changed its support priorities.

The Bank's current activities in the sector are listed in table 12.2. ENR activities of other donor partners in Uganda are listed in table 12.3.

Recent Bank work on Governance in Uganda indicates that ENR support should be through targeted projects, and be conditional on adequate resource and managerial commitments from the Government of Uganda for the implicated central and local government institutions. Technical assistance (TA) and training support can cover policy development. Strategic ENR public-private partnerships (PPPs) might work best for equipment provision to central and local governments. Grants may best work for short-term projects undertaken by joint government/civil society organization (CSO) teams.

12.1 Government Anti-Corruption (GAC) Initiatives

A strategic objective of the Bank Country Assistance Strategy (CAS 2011–15) for Uganda is to *strengthen good governance and value for money*, corresponding to Uganda's Vision and National Development Plan (NDP 2010) objective to "strengthen good governance, defense and security." A Governance Partnership Facility Window 1 grant (\$1.48 million) is to help intensify attention to GAC during the CAS period. A Bank governance team in Uganda is to meet periodically to assess the GAC initiatives and adjust them as needed. They include:

- Introduction of the GAC diagnostics into sector projects.
- Development and implementation of project GAC Action Plans to introduce sector wide initiatives on performance management.

- Testing of third-party (CSO) monitoring of project implementation.
- Increasing of transparency through increased public disclosure of project activities.
- Launching of a Data Tracking Mechanism (DTM) to be managed by an independent research institute.

To support the governance strategy of the CAS, any ENR sector project developed by the Bank would need to incorporate the GAC diagnostics and arrangements, as was done for the agriculture sector Agricultural Technology and Agribusiness Advisory Services (ATAAS) project within the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF). For example, the empowerment of farmers and transparency in their dealings with the National Agriculture Advisory Services (NAADS) is a central feature of the GAC arrangements of the project. Similar arrangements could be developed for any ENR project.

The Bank has currently two projects targeting Public Administration, Law and Justice at both national and local levels (table 12.1). Both projects are providing support for the development of good GAC strategies at the local and central government levels. An ENR governance initiative should liaise with these two projects to identify possible areas of synergy.

ENR initiatives to support improved environmental governance would involve the development of an ENR awareness campaign targeting high-level decision makers at central and decentralized levels of government. Environmental governance could also benefit with an effort to boost public participation. As discussed in chapter 6, public participation in environmental decision making—such as engagement in the Environmental Impact Assessment (EIA) process—could benefit from the implementation of a strategic communication plan. Environmental governance and management could be improved through improvements in all the processes of EIA. Therefore, within existing projects (such as the Environmental Management Capacity Building Project II, EMCBP II), the Bank should continue to support EIA capacity building in the National Environmental Management Authority (NEMA), and within the community of the EIA practitioners.

Table 12.1 Bank Public Administration Projects

Local Government Management and Services Delivery Project (2007–11) \$198.7 million (MFPED); \$55 million (World Bank)
Themes <ul style="list-style-type: none"> • Gender. • Decentralization. • Municipal governance and institution building. • Public expenditure, financial management, and procurement.
Public Service Performance Enhancement Program (2006–13) \$86.57 million (MPS); \$70 million (World Bank)
Themes <ul style="list-style-type: none"> • Public sector governance. • Accountability and anti-corruption. • Administrative and civil service reform. • Public expenditure, financial management, and procurement.

Source : Project Documents.

Note: MFPED = Ministry of Finance, Planning and Economic Development; MPS = Ministry of Public Service

12.2 Innovative Financing

Uganda's submitted its REDD-Plus Readiness Preparation Proposal in June 2011, with support from the World Bank and Norway. The priority actions of the proposal will form the basis of the eventual National REDD+ Strategy. The required financing to develop the Strategy is estimated at \$12 million. The Bank could continue to support the REDD+ initiative in collaboration with Norway.

ENR is a priority sector for Norway in Uganda. The Norwegian Agency for Development Cooperation (NORAD) has been extensively involved in Uganda's forestry and has recently supported the institutional review of the sector. It is probably best positioned to assist in defining institutional arrangements for implementing a REDD+ Strategy in Uganda and supporting the development of associated institutional capacity.

The Bank might assume the supporting role for the development and implementation of a R-PP awareness and communication strategy. This is to be a government process within and outside the country; hence it requires political and executive leadership. Through facilitation and financial support, the Bank can help to build environmental awareness among the governing elite, through what is widely considered a mechanism for the national and global public good.

A *Payment for Ecosystem Services* (PES) grant was approved by the Global Environment Facility (GEF). Working with the Wetlands Management Department (WMD), it supports the development of an experimental methodology for testing the effectiveness of PES to enhance conservation in productive landscapes. The Food and Agriculture Organization's (FAO's) Kagera TAMP project will also try to identify market opportunities for cost-benefit sharing mechanisms such as PES.

PES as a way to secure funding for conservation initiatives is cited in numerous ENR documents. There are discussions now occurring in Uganda, particularly relating to wetlands, for PES arrangements between hydropower producers and urban water suppliers. The Bank could build on the PES momentum supported by the GEF, FAO, UNDP, International Union for the Conservation of Nature (IUCN), and World Resources Institute (WRI) and provide TA and investments to establish pilot PES projects.

Clean Development Mechanism projects in Uganda are coming along. In addition to two small hydropower projects there are two ENR projects—the Nile Basin (Rwoho) Reforestation and the Municipal Waste Compost Program. As a way to support the Climate Change Unit in MWE, the Bank could continue providing TA to identify and develop qualifying projects.

Accessing Climate Change Funds for Sustainable Land Management (SLM) should be pursued as both a means of innovative financing and as means to build interministerial coordination capacity. The Global Mechanism launched an initiative entitled *Strengthening Capacities to Access Climate Change Finance for SLM*. However, accessing the initiative requires collaboration between MWE and MAAIF for the identification of projects. The Bank could support and facilitate such an initiative, which would build capacity, strengthen the interministerial collaborative mechanism for SLM, support the Climate Change Unit, and access international climate change funding.

12.3 Sector-Specific Capacity Development and Field Activities

Within the MWE, the Danish International Development Agency (DANIDA) is currently supporting the ENR subsector institutional review, and development of the wetlands and forestry demarcation strategy, as per the Joint Sector Review (JSR 2009, 2010) Undertakings. The approach of both the MWE and DANIDA is to strengthen the linkages between the ENR and Water Supply and Sanitation (WSS) for better coordination between the two subsectors to ensure sustainable water supplies. DANIDA intends to maintain its support to Uganda's ENR sector at current levels.

Forestry is targeted by a large number DP projects. Norway in particular has been heavily committed to institutional capacity development in the sector. It also supports local forestry-related environmental management projects. The other large DP to forestry is the AfDB through their FIEFOC project with its dual focus on forestry and agriculture. A number of small forestry-focused projects are supported by FAO, Denmark, and UNDP. The Netherlands and UNDP support sizable projects in the National Protected Areas. The sector also benefits from multifocus basin projects such as FAO's Kagera TAMP and (FAO, the World Food Program [WFP]) ecosystem rehabilitation projects in Northern Uganda.

In addition to REDD+ Readiness support, the Bank-led research on forest governance that fed into the sector's performance assessment was financed by Norway. The Bank also supports the Rwoho reforestation carbon offset project; and through the EMCBPPII, it supports community tree planting. The Bank should collaborate with Norway and continue to support forestry (through the Forestry Sector Support Department, FSSD) in the development of the implementation of the R-PP and development of the national REDD+ Strategy. It could also provide TA for the finalization of Forestry Regulations and the development of forestry guidelines.

Wetlands have a medium-sized GEF-supported project providing institutional capacity at the national level and some local community wetland planning. Its main objective is the investigation of PES arrangements. WRI has been active at the national level, building data management and analysis capacity at the WMD. A small European Union (EU)/ United Nations Educational, Scientific and Cultural Organization (UNESCO)-funded project "WETwin" is underway in two wetland areas in Uganda. Its objective is to build capacity to include wetlands in Integrated Water Resource Management (IWRM). A Japanese International Cooperation Agency (JICA) wetland project in the districts of the Lake Kyoga area is about to get underway. (Activities targeting wetlands alone are listed in table 9.1.)

There are a few multifocused projects that will impact the wetlands within their scope. The recently approved GEF biodiversity project in northeastern Uganda focuses on forests, but does mention the rehabilitation of degraded wetlands. Wetlands will benefit from the basin-wide Kagera TAMP as part of the coordinated resource management strategies, and from the Lake Victoria Environmental Management Project II initiatives to restore wetlands for their wastewater treatment functions.

Forestry has historically been a favored target of DP assistance but with the controversy over political interference and corruption in that sector in recent years, donors have become cautious about their participation in forestry. Conversely, with the importance of wetlands for water supply and climate resilience coming to the fore, donors have begun to

show more interest in that sector. However, forestry remains a high government priority and as such the government has recently (March 2012) taken measures to demonstrate its commitment to halt deforestation. Hence, a Bank intervention could cautiously continue to support forestry, while primarily focusing on wetlands. An integrated ecosystem management approach could be adapted that provides strong linkages between wetlands, fisheries, land management, and forestry at the central, district, and community level.

An integrated ecosystems project could also support the Demarcation Strategy for Wetlands and Forests, which represents basic institutional development for the sustainable development of both wetland and forestry resources. But implementing the Strategy will be complex, requiring a coordinated consultative process at three levels of government, with high potential for political interference and corruption. Any intervention to implement a demarcation strategy will require an associated GAC Action Plan. Also, as wetlands are unsurveyed government land, Strategy implementation necessitates coordination with the MLHUD, the responsible body for land surveys. A World Bank project within the MLHUD is currently assisting with the process of inventorying government land.⁵⁹ A Bank initiative in wetlands and forestry would build on expertise already acquired in the MLHUD project.

In the *fisheries* sector two projects that are underway focus on Lake Victoria: Uganda is part of the regional EU-supported Fisheries Management Plan, and within the GEF ATAAS project of MAAIF, there is a component to support research capacity for fisheries with the objective of addressing postharvest management and value addition. On Lakes George and Kyoga, Iceland is helping to build local and central capacity through its Quality Assurance for Fish Marketing Project.

A fisheries component within a broader integrated ecosystem management project could provide support to non-Lake Victoria fisheries. It would highlight linked wetland and water body systems (lakes and rivers) that are jointly affected by fish breeding ground destruction, water pollution, and catchment degradation. This component could include identification of water body and wetland interface areas, particularly at risk to the effects of degradation in contiguous ecosystems. A non-Lake Victoria fisheries activity would be important for local livelihoods in an integrated ecosystem approach to natural resource management.

Air and water pollution are other ENR areas that are imposing high degradation costs but that are relatively unaddressed by the Bank and DPs. Through the EMCBP II project, the Bank is providing TA to NEMA in development of air quality standards and regulations. That should continue, but given the health burden of indoor air pollution, the Bank may consider providing strategic support to start reducing Uganda's dependence on wood fuel, which is also a strategy of the NDP (2010). Elements of such a strategy would include improving intersectoral linkages (ENR, Ministry of Health [MOH], MEMD [Ministry of Energy and Mineral Development]), addressing data gaps, establishment of enabling policies that support alternative technologies and fuels, and the development of a public awareness campaign.

⁵⁹ Development of the National Urban Policy and Strategic Urban Development Plan for Uganda. Approval date: February 18, 2010; Closing date: December 31, 2012.

Table 12.2 Current World Bank Projects in Natural Resource Sectors

<p>Environmental Management Capacity Building Project II (EMCBPII, 2001–11) \$33 million (NEMA and NFA)</p> <ul style="list-style-type: none"> • Capacity building in lead agencies, local governments, and communities. • Mainstreaming environment into the DDP and Lead Agency Operations. • Support to District Environment Committees; review of key sector policies for their environment impacts. • Promotion of environment content/education in schools. • Capacity building of environment inspection officers; capacity building in EIA. • Support to development of air quality regulations. • Use of economic instruments in oil and gas operations. • Priority petroleum sector activities (environmental management). • Municipal solid waste management (NEMA); community tree planting in two CFRs (NFA).
<p>REDD+ R-PP \$383,000 (NFA) World Bank Forest Carbon Partnership Facility and NORAD</p> <ul style="list-style-type: none"> • Formulation of Uganda's R-PP (Final + Appendixes Submitted June 2011).
<p>Nile Basin Reforestation carbon offset project (Rwoho) \$300,000 (NFA) BioCarbon Fund</p> <ul style="list-style-type: none"> • Carbon credit project to reforestation for 2,137 hectares of pine forests and earn carbon credits under the CDM. • Five projects over 2,137 hectares with one approved for CDM. • CFM Plan managed by local NGO and NFA.
<p>Uganda SLM Country Project (2010–) \$245 million (NAADS and NARO) includes \$7.2 million (GEF)</p> <ul style="list-style-type: none"> • Contained within the ATAAS Project, conforming to the GEF Strategic Investment Plan for SLM in Sub-Saharan Africa. • Create an enabling environment for SLM. • Scale up SLM to achieve global environmental benefits.
<p>Agricultural Technology and Agribusiness Services (starts 2010) \$665.5 million (NAADS and NARO); \$120 million (World Bank); 7.2 million (GEF); \$41 million (other DP)</p> <ul style="list-style-type: none"> • Build on preceding Second Agricultural Research and Training Project, and the NAADS project. • Apply GAC Program. • Promote SLM and MAAIF's capacity to coordinate SLM and climate risks (GEF component). • Develop agricultural technologies and support agribusiness. • Strengthen advisory services and linkages between research (NARO) and extension (NAADS). • Complement E. Africa Agricultural Productivity Project (EAAPP).
<p>BEIA* Promotion of Improved Biomass TLUD Stoves in Uganda (2010–12) \$260,000 (Centre for Research in Energy and Energy Conservation)</p> <ul style="list-style-type: none"> • Develop rural services and infrastructure. • Support SMEs. • Target pollution management and environmental health.
<p>BEIA Bioelectricity in Uganda (2010–12) \$230,000 (Agency for Promoting Sustainable Development Initiatives)</p> <ul style="list-style-type: none"> • Support SMEs. • Support rural nonfarm income.

Source : Project documents.

Note: ATAAS = Agricultural Technology and Agribusiness Advisory Services; BEIA = Biomass Energy Initiative for Africa; CDM = Clean Development Mechanism; CFM = Collaborative Forest Management; DDP = District Development Plan; DP = Development Partner; EIA = Environmental Impact Assessment; GAC = Governance and Anti-Corruption; GEF = Global Environment Facility; MAAIF = Ministry of Agriculture, Animal Industry and Fisheries; NAADS = National Agriculture Advisory Services; NARO = National Agriculture Research Organization; NEMA = National Environmental Management Authority; NFA = National Forestry Authority; NORAD = Norwegian Agency for Development Cooperation; REDD+ = Reducing Emissions from Deforestation and Forest Degradation (Plus); R-PP = Readiness Preparation Proposal; SLM = Sustainable Land Management; SMEs = small and medium enterprises; TLUD = Top-lit updraft.

Table 12.3 Summary of Development Partner Projects Underway in Uganda

Source	Amount	Scope			Groups		Main Environment Focus						
		Regional	National	Local	Institutions	Private sector	SLM	Forests	Water bodies	Wetlands	Fish	Pollution	Climate change
African Development Bank													
Farm Income Enhancement and Forest Conservation (FIEFOC) (MWE) 2006–12	\$60.0		•	•	•	•	•	•					
Agriculture Infrastructure Program (MAAIF)	\$64.8			•	•	•							
Bilateral													
Clean Development Capacity Support (BE)	\$2.0		•		•	•							
Belgian Food Security Fund—EWS in three districts over 3 yrs (BE)	\$0.8			•	•								•
Tree Talk Plus: Greening Uganda 2010–12 (DK)	\$0.8			•	•			•					•
Environment Aspects of Climate Change A&D 2008–12 (DK)	\$1.9		•		•								•
Reform of the Urban WSS (RUWASS) 2008–14 (GIZ)	4.8 + 6.0		•		•								• ⁶⁰
Quality Assurance for Fish Marketing Project (ICEIDA) (DFR)	3.9		•	•	•	•					•		
National Wetlands Management Project (JICA) (WMD)	5.5		•	•	•	•				•			
Technical Assistance to Meteorology Sector (JICA) (MWE)	\$5		•	•	•				•	•			•
Institutional Support (NORAD) (MWE)	\$11.5		•		•			•					
SGPS and Support to Timber Growers (NORAD) (MWE)	\$6.0 + €10 (EU)			•		•		•					
Mt. Elgon Regional Ecosystem Program (NORAD)	n.a.	•		•	•	•		•					

⁶⁰ Data management, strategy and plan for flood and drought, reservoir regulation improvement, public awareness building.

Table 12.3 Summary of Development Partner Projects Underway in Uganda

Source	Amount	Scope			Groups		Main Environment Focus						
		Regional	National	Local	Institutions	Private sector	SLM	Forests	Water bodies	Wetlands	Fish	Pollution	Climate change
Rwenzori Mountains Conservation and Environmental Management (NORAD)	n.a.			•	•	•		•					
Lake Albert Eastern Catchment Management Initiative (NORAD)	n.a.			•	•			•	•			•	
Semiliki Water Resources Management Program (NORAD)	n.a.			•	•								
Oil for Development (NORAD)			•		•								
Promotion of Renewable Energy and Energy Efficiency Program (NL) (MEMD)	€4.2		•	•		•							• ⁶¹
Transboundary Collaboration in Virunga-Bwindi Ecosystems (NL)		•	•		• ⁶²			•					
Bugagali Dam (NL)			•		•								• ⁶³
EU													
Providing Access to Modern Energy in N. Uganda (GIZ)	€2.4		•	•	• ⁶⁴								•
WETwin Project in Nabajuzzi and Namatala Wetlands	n.a.			•	•				•				
Karamoja Livelihoods Project	€15			•	•	•							• ⁶⁵
Global Climate Change Alliance	€11		•		•		•		•				•
FAO													
Rehabilitation, Development, and Sustainable Management	\$0.5		•	•	•			•					

⁶¹ Implement National Biogas Program.

⁶² Ten-year Strategic Plan has been developed. A tripartite treaty is under development.

⁶³ Purchase of carbon credits through Clean Development Mechanism (CDM).

⁶⁴ The SEA of road sector (2010) and EIAs for large-scale infrastructure projects.

⁶⁵ Drought preparedness.

Table 12.3 Summary of Development Partner Projects Underway in Uganda

Source	Amount	Scope			Groups		Main Environment Focus						
		Regional	National	Local	Institutions	Private sector	SLM	Forests	Water bodies	Wetlands	Fish	Pollution	Climate change
of Forest Resources in North 2010–12 (FSSD)													
NFP Facility for Forestry (FSSD)	\$0.2		•		•			•					
Trans-boundary Agro-ecosystem Management Project for Kagera River Basin 2009–14 (MAAIF, MWE, NEMA)	\$24 total	•	•	•	•		•	•	•	•			
UNDP													
Conservation of Biodiversity in Albertine Forests 2008–12 (WWF/MWE)	\$11.35		•	•	•			•					
Extending Protected Area Management 2009–13 (IUCN/WMD)	\$3.8		•	•	•			•		•			
Mainstreaming SLM in six Cattle Corridor districts 2010–12 (MAAIF)	\$1.6		•	•	•		•						
Enabling Environment for SLM to overcome land degradation in the cattle corridor of Uganda (MAAIF)	\$4.2		•	•	•		•						
Territorial Adaptation to Climate Change for Mbale Region, 2010–13 (MWE/Mbale District)	\$1			•	•								•
Promoting Chemical Safety for Children at work in Rural Agricultural Communities, 2011–13 (Ministry of Gender/PROBICU)	\$0.25		•	•	•	•						•	
Improving policies and strategies for sustainable ENR and Climate Risk Management, 2011–14 (MWE)	\$1.45		•		•		•	•	•	•	•	•	•

Table 12.3 Summary of Development Partner Projects Underway in Uganda

Source	Amount	Scope			Groups		Main Environment Focus						
		Regional	National	Local	Institutions	Private sector	SLM	Forests	Water bodies	Wetlands	Fish	Pollution	Climate change
Strengthening Sustainable ENR and CC Management, 2011–14 (MWE/WWF)	\$4.5		•		•		•	•		•	•		•
Ecosystem Based Adaptation to Climate Change, 2011–14 (MWE/IUCN)	\$1.73		•		•			•	•	•	•		•
National Climate Change Capacity Building Programme, 2012–14 (MWE-CCU)	0.6		•		•								•
Addressing Barriers to the adoption of improved charcoal production technologies, 2013–16 (MEMD)	\$8.0		•	•	•	•	•						•
Conservation and Sustainable Use of Savanna Woodland, Kidepo, NE Uganda (NEMA/UWA)	\$13.48		•	•	•			•		•			
GEF-Supported Projects													
SIP-Lake Victoria Environmental Management Project II	\$140 (total)	•	•	•	•	•			•	•	•		
Developing Experimental Methodology for Testing PES (UNEP/IIED/WMD)	\$0.9 (total)		•		•					•			
WFP													
UN Joint Program on Climate Change for Uganda (5 yrs)	\$35.7		•	•	•	•							• ⁶⁶
Karamoja Productive Assets Program (4 yrs)	\$8			•	•		•	•					

⁶⁶ Formulate policy and support implementation; develop climate change fund; develop web-based platform to share adaptation and mitigation best practices; national vulnerability assessment; develop national research agenda; training and awareness to districts; automatic weather stations; and complementary activities of IWRM, environmental protection, and livelihood diversification.

Table 12.3 Summary of Development Partner Projects Underway in Uganda

Source	Amount	Scope			Groups		Main Environment Focus							
		Regional	National	Local	Institutions	Private sector	SLM	Forests	Water bodies	Wetlands	Fish	Pollution	Climate change	
UN Trust Funds for Human Security (2 yrs)	\$1.3			• ⁶⁷	•	•						•		
Crown Agents Tree Planting (3 yrs)	\$5			•	•			•						
Installation of Automatic Weather Stations in Karamoja and Teso areas	\$0.4			•	•									•

Source : Project documents and websites.

Note: BE = Belgium; CCU = Climate Control Unit; DFR = Department of Fisheries Resources; DK = Denmark; ENR = Environment and Natural Resources; EU = European Union; EWS = Early Warning System; FAO = Food and Agriculture Organization; FSSD = Forestry Sector Support Department; GIZ = German Society for International Cooperation (formerly GTZ); ICEIDA = Icelandic International Development Agency; IIED = International Institute for Environment and Development; IUCN = International Union for the Conservation of Nature; JICA = Japanese International Cooperation Agency; MAAIF = Ministry of Agriculture, Animal Industry and Fisheries; MEMD = Ministry of Energy and Mineral Development; MWE = Ministry of Water and Environment; NEMA = National Environmental Management Authority; NL = Netherlands; NORAD = Norwegian Agency for Development Cooperation; PROBICU = Pro-Biodiversity Conservation in Uganda; SIP = Sector Investment Plan; SLM = Sustainable Land Management; UNEP = United Nations Environment Programme; WFP = World Food Program; WMD = Wetlands Management Department; WWF = World Wildlife Fund.

⁶⁷ Restore sustainable resource management in Internally Displaced Persons (IDP) camp areas, build community roads.

Bibliography

- APRM (African Peer Review Mechanism). 2007. *The Uganda Country Self-Assessment Report and Program of Action*. National Commission. Midrand.
- . 2009. *APRM Country Review Report No.7*. Midrand.
- Aryamanya-Mugisha H. 2011. “Twenty Years of Wetlands Conservation in Uganda—Have Uganda’s Wetlands become Wastelands Again?” Paper presented on World Wetlands Day, Public Talk at Uganda Museum, Kampala.
- Atukunda. 2009. EIA for Decision-making? A Capacity Building Case for Uganda. International Association for Impact Assessment.
- BTC Uganda. 2009. *Environment and Natural Resources Report Series: Enhancing Forests’ Contribution to Growth, Employment and Prosperity*. Kampala: UNDP-UNEP Poverty-Environment Initiative.
- Bush, G., S. Nampindo, C. Aguti, and A. Plumptre. 2004. *The Value of Uganda’s Forests: A Livelihoods and Ecosystems Approach*. Kampala: National Forestry Authority.
- Buyerah, P., and T. Rukundo. 2008. “Role of Environmental Impact Assessment in Addressing Oil Impacts in the Albertine Rift, Uganda.” Paper No. 170, National Forestry Authority, Kampala.
- DFR (Department of Fisheries Resources). 2003. *Guidelines for Beach Management Units in Uganda*. Kampala: MAAIF.
- Drechsel, P., L. Gyiele, D. Kunze, and O. Cofie. 2001. “Population Density, Soil Nutrient Depletion, and Economic Growth in Sub-Saharan Africa.” *Ecological Economics* 38: 251–58.
- Emerton, L., and E. Muramira. 1999. *Uganda Biodiversity: Economic Assessment. Uganda National Biodiversity Strategy and Action Plan*. Nairobi: IUCN—The World Conservation Union.
- Emerton, L., L. Iyango, P. Luwum, and A. Malinga. 1998. *The Present Economic Value of Nakivubo Urban Wetland, Uganda*. Nairobi: IUCN—The World Conservation Union.
- FAO (Food and Agriculture Organization of the United Nations). 2010. *Global Forest Resources Assessment (FRA) 2010*. Country Report: Uganda, Forestry Department, FAO, Rome.
- Frankel, J. A. 2010. “The Natural Resource Curse: A Survey.” NBER Working Paper 15836, National Bureau of Economic Research, Cambridge, MA. <http://www.nber.org/papers/w15836>.
- Government of Uganda. 2010. *National Development Plan (NDP) 2010/11—2014/15*. Kampala: Government of Uganda.
- Hamilton, K., M. Sjardin, M. Pettes-Stanley, and T. Marcello. 2010. “State of the Voluntary Carbon Markets 2010: Building Bridges, Ecosystem Marketplace and Bloomberg New Energy Finance.” http://forest-trends.org/publication_details.php?publicationID=2433.

- Hepworth, N., and M. Goulden. 2008. *Climate Change in Uganda: Understanding the Implications and Appraising the Response*. Edinburgh: LTS International.
- Hoima District. 2011. "Local Government Budget Framework Paper FY2011/12."
- Humphreys, M., J. Sachs, and Stiglitz, eds. 2007. *Escaping the Resource Curse*. New York: Columbia University Press.
- Jagger P., and J. Pender. 2001. *Markets, Marketing and Production Issues for Aquaculture in East Africa: The Case of Uganda*. Washington, D.C.: International Food Policy Research Institute.
- Johnson, L. 2010. *Oil Impact Mitigation Uganda—EIA Review 2010*. Report prepared for the World Conservation Society, Kampala.
- Kakuru, W. 2011. *Wetlands Review for the Country Environmental Analysis*. Kampala.
- Karanja, F., L. Emerton, J. Mafumbo, and W. Kakuru. 2001. *Assessment of Economic Value of Pallisa District Wetlands*. Kampala. Uganda: Biodiversity Economics Programme for Eastern Africa. IUCN. The World Conservation Union and Uganda National Wetlands Programme.
- Kateregga, E. 2010. "Economic Analysis of Actions Proposed for Strengthening the Governance of Chemicals Management for the Agriculture Sector under the UNDP/ENDP Strategic Approach to International Chemical Management (SAICM) Project." Makerere University, Faculty of Economics and Management. Kampala.
- . 2011. "Economic Analysis of Actions Proposed for Strengthening the Governance of Chemicals Management for the Agriculture Sector." Under the Uganda/UNDP/UNEP Strategic Approach to International Chemical Management (SAICM) Project, Draft.
- LTS International Ltd. 2008. "Climate Change in Uganda: Understanding the Implications and Appraising the Response." Scoping Mission for DFID Uganda, Kampala.
- . 2010. *Review of Forestry Sector in Uganda: Proposals for Improving Governance and Effective Management in the Forestry Sector*. Main Report, Report commissioned by MWE, DEA. Kampala.
- Matouv, J. 2011. "Fisheries Review for the Country Environmental Analysis." Second Draft. May. Kampala.
- MAAIF (Ministry of Agriculture, Animal Industry, and Fisheries). 2009. *Uganda National Rice Development Strategy*. Second Draft. Kampala: MAAIF.
- . 2010a. *Agriculture Sector Development Strategy and Investment Plan: 2010/11–2014/15*. Kampala: MAAIF.
- . 2010b. *Uganda Strategic Investment Framework for Sustainable Land Management 2010–2020*. Kampala: MAAIF.
- MEMD (Ministry of Energy and Mineral Development). 2008. "National Oil and Gas Policy for Uganda," Final. Kampala: MEMD.
- MLWE (Ministry of Lands, Water and Environment). 2008. "Department of Disaster Preparedness and Refugees." Kampala.

- MOH (Ministry of Health). 2010. *Health Sector Strategic and Investment Plan. 2010/11—2014/15*. Kampala: MOH.
- MWE (Ministry of Water and Environment). 2006. *An Interim Sub-sector Strategic Plan for the Department of Environmental Affairs (DEA)*. Kampala: MWE.
- . 2009. *Strategic Sector Investment Plan for the Water and Sanitation Sector (WSSIP) in Uganda*. Kampala: MWE.
- . 2010a. *Proposed Workplan for Undertaking No. 3. Theme: Environment and Natural Resources: Refinement of Roles and Interfaces*. Kampala: MWE.
- . 2010b. *Strategy for Effective Wetland and Forest Boundary Demarcation in Uganda. Undertaking No. 2*. Draft. Kampala: MWE.
- . 2010c. *Water and Environment Sector Performance Report*. Kampala: MWE.
- . *Environment and Natural Resources Sector Investment Plan: 2008/09–2017/2018*. Kampala: MWE.
- MWE (Ministry of Water and Environment) and World Bank. 2010. “Forest Governance Reforms in Uganda.” Workshop organized by the Ministry of Water and Environment and the World Bank, Kampala, June 15–16. Workshop Report by Gaster Kiyingi.
- Moyini, Y. 2008. “The Economic Valuation of the Proposed Degazettment of Part of Mabira Central Forest Reserve.” Nature Uganda, Kampala.
- Moyini, Y., and B. Uwimbabazi. 1999. “Analysis of the Economic Significance of Gorilla Tourism in Uganda.” Environmental Monitoring Associates (EMA) Ltd., Kampala.
- NEMA (National Environment Management Authority). 2008. *State of the Environment Report for Uganda 2008*. Kampala: NEMA.
- . 2009a. *Uganda: Atlas of our Changing Environment. National Environmental Management Authority*. Kampala: NEMA.
- . 2009b. *Strategic Plan 2009/10—2013/14 for Continuous Performance Improvement*. Kampala: NEMA.
- . 2009c. *Situational Report on Sound Management of Chemicals in Uganda*. NEMA, Kampala.
- . 2009d. *Health and Environment Analysis Report in the Sound Management of Chemicals in Uganda*. Kampala: NEMA.
- . 2010a. *Environmental Sensitivity Atlas for the Albertine Graben*. 2nd Edition. Kampala: NEMA.
- . 2010b. *National Action Plan for Sound Management of Chemicals in Uganda*. Draft report by Ogaram, Kampala.
- NFA (National Forestry Authority). 1996. *Land Cover Map*. Kampala: NFA.
- . 2005. *National Biomass Technical Report*. NFA, Kampala.
- . 2009. *National Biomass Study*. Draft Report, NFA, Kampala.

- . 2011. “REDD Readiness Preparation Proposal for Uganda.” Submitted to the Forest Carbon Partnership Fund, NFA, Kampala.
- Nunan, F. 2006. “Empowerment and Institutions: Managing Fisheries in Uganda.” *World Development* 34 (7): 1316–32. www.elsevier.com/locate/worlddev.
- Nkonya E., and C. Kaizzi. 2003. Poverty-Natural Resource Management Linkages: Empirical Evidence from Uganda. Kampala: International Food Policy Research Institute (IFPRI). <http://ussp.ifpri.info/files/2011/10/poverty-nrm-linkages-in-uganda-nkonya-and-kaizzi-03.pdf>
- Orach-Meza. 1991. Existing Fisheries Legislation and Mechanisms for Surveillance and Control on Lake Victoria. A Paper Prepared for the National Seminar on the Management of the Fisheries of the Uganda Sector of Lake Victoria. Jinja: August.
- Oxford Policy Management. 2007. *Uganda Agriculture Sector Public Expenditure Review Phases 1 and 2*. Final Report. Kampala: DFID.
- Pathak, P., K. Sahrawat, S. Wani, R. Sachan, and R. Sudi. 2009. “Opportunities for Water Harvesting and Supplementary Irrigation for Improving Rainfed Agriculture in Semi-arid Areas.” In *Comprehensive Assessment of Water Management in Agriculture Series: Rainfed Agriculture: Unlocking the Potential*. London: Earthscan, and Colombo: International Water Management Institute.
- PPDA (Public Procurement and Disposal of Public Assets Authority). 2010. *The 2nd Public Procurement Integrity Survey*. Final Report, Kampala: PPDA.
- Pretty, J., A. D. Noble, D. Bossio, J. Dixon, R. E. Hine, F. W. T. Penning de Vries, and J. I. L. Morison. 2006. Resource-Conserving Agriculture Increases Yields in Developing Countries. *Environmental Science and Technology* 40: 4.
- Rockstrom, J., J. Barron, and P. Fox. 2003. “Water Productivity in Rainfed Agriculture: Challenges and Opportunities for Smallholder Farmers in Drought-prone Tropical Agroecosystems.” In *Water Productivity in Agriculture: Limits and Opportunities for Improvement*, ed. J. W. Kijne, R. Baker, and D. Molden. Oxfordshire: CABI Publishing and Colombo: International Water Management Institute.
- Rockström, J., N. Hatibu, T. Oweis, and S. Wani. 2007. “Managing Water in Rainfed Agriculture.” In *Comprehensive Assessment of Water Management in Agriculture Series: Rainfed Agriculture: Unlocking the Potential*. London: Earthscan, and Colombo: International Water Management Institute.
- Rutaisire, J., H. Charo-Karisa, A.P. Shoko, B. Nyandat and K.O. Osewe (2008). “Aquaculture production systems, cost benefit analysis and policy implications in East Africa.” A paper presented at the Lake Victoria Fisheries Organization Regional Stakeholders’ Conference, *Fish for the future is everyone’s responsibility*, Kampala 27th – 29th October 2008.
- Rwakakamba, T., M. 2009. “How Effective are Uganda’s Environmental Policies?: A Case Study of Water Resources in 4 Districts.” *Mountain Research and Development (MRD)* 29 (2 May).

- Schwarte, C. 2008. "Public Participation and Oil Exploration in Uganda." Gatekeeper Series, International Institute for Environment and Development (IIED). London.
- Ssebisubi, M. 2011. Analysis of Small-Scale Fisheries Value Chains in Uganda (Draft Report). Fisheries Sector Brief. <http://www.fao.org/valuechaininmallscalefisheries/participatingcountries/uganda/>
- SKAT. 2010. *Proposed Workplan for Undertaking No. 3 (November) and Inception Report (August) Theme: Environment and Natural Resources*. Kampala.
- Slade, G., and K. Weitz. 1991. "Uganda: Environmental Issues and Options." Center for Resource and Environmental Policy Research Working Paper #913, School of Forestry and Environmental Studies, Duke University. Durham, N.C.
- UBOS (Uganda Bureau of Statistics). 2010. *Statistical Abstract*. Kampala: UBOS.
- UBOS and Bank of Uganda. 2007. *A Survey of Informal Trade amongst Selected Commodities*. Uganda Bureau of Statistics and Bank of Uganda. Kampala.
- WCS (Wildlife Conservation Society). 2010. *Oil Impact Mitigation Uganda – EIA Review 2010*. Kampala: WCS.
- WID (Wetlands Inspection Division). 2001. *Wetlands Sector Strategic Plan 2001–2010*. Kampala: Ministry of Water, Lands and Environment.
- WMD (Wetlands Management Department). 2009. Draft. *Wetlands Sector Strategic Plan 2011–2020*. Kampala: Ministry of Water, Lands and Environment.
- WMD (Wetlands Management Department) and WRI (World Resources Institute). 2009. *Mapping a Better Future: How Spatial Analysis Can Benefit Wetlands and Reduce Poverty in Uganda*. Washington, DC and Kampala: WRI.
- World Bank. 2006. *Where is the Wealth of Nations? Measuring Capital for the 21st Century*. Washington, DC: World Bank.
- . 2007a. *World Development Report 2008: Agriculture for Development*. Washington, DC: World Bank.
- . 2007b. *Uganda: Governance of Environmental and Natural Resource Management for Pro-poor Growth—A Strategic Environmental Assessment*. December 15. Unfinished draft report, World Bank, Washington, DC.
- . 2008a. *Lake Victoria Environmental Management Project II*. Washington, DC: World Bank.
- . 2008b. "Uganda Sustainable Land Management Public Expenditure Review (SLM PER)." Agriculture and Rural Development, Sustainable Development Network, Africa Region.
- . 2009a. Draft. "Country Assistance Strategy." Upstream Document, World Bank, Washington, DC.
- . 2009b. *Integration of Natural Resources into Local Government Decision Making*. Report prepared by S. Namirembe and M. Lwanga, ORGUT and DEGE Consult, Kampala.

- . 2009c. *Lake Victoria Environment Management Project II*. PAD. Washington, DC: World Bank.
- . 2010a. *Uganda Country Assistance Strategy for Period 2011-2015*. Washington, DC: World Bank.
- . 2010b. “Uganda: Agriculture Public Expenditure Review.” AFTAR. Sustainable Development Department, World Bank, Washington, DC.
- . 2011a. “The Changing Wealth of Nations: Measuring Sustainable Development in the New Millennium.” *Environment and Development Series*. Washington, DC: World Bank.
- . 2011b. *Report on Environmental Governance*. Draft. World Bank, Washington, DC.
- . 2011c. *Uganda: Country Water Assistance Strategy*. Draft. Washington, DC: World Bank.
- . *Strategic Investment Programme for SLM in SSA. Activity 1.2 Assessment of the Nature and Extent of Barriers and Bottlenecks to Scaling-up SLM Investments in Uganda*. Unfinished draft. Washington, DC: World Bank.
- WHO (World Health Organization). 2007. *Indoor Air Pollution: Nation Burden of Disease Estimates*. Geneva: WHO.
- WWAP and DWD (World Water Assessment Programme and Directorate of Water Development). 2005. *National Water Development Report*. WWAP and DWD, Paris.
- Yaron, G., and Y. Moyini. 2004. *The Role of Environment in Increasing Growth and Reducing Poverty in Uganda*. Technical Report: Final, EMA Consult and GY Associates, Kampala.