



**Transboundary Agro-ecosystem Management
Programme for the Kagera River Basin**

Project Document



Food and Agriculture
Organization of the
United Nations

A – Background and context

Transboundary Agro-ecosystem Management Programme for the Kagera River Basin (Kagera TAMP)

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FAO/GLOBAL ENVIRONMENT FACILITY PROJECT DOCUMENT

Countries:	Burundi, Rwanda, Uganda, United Republic of Tanzania
Project Title:	Transboundary Agro-ecosystem Management Programme for the Kagera River Basin (Kagera TAMP)
GEFSEC Project ID:	2139
FAO Project ID:	595634
FAO Project Symbol:	GCP/RAF/424/GFF
GEF Implementing Agency:	Food and Agriculture Organisation of the United Nations (FAO)
Other Executing Partners:	Ministry of Agriculture and Animal Resources (MINAGRI) in Rwanda; Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) in Uganda; Division of the Environment, Vice President's Office (DOE/VPO) in the United Republic of Tanzania, and Ministry of Agriculture and Livestock (MINAGRIE) in Burundi.
GEF Focal Area:	Land Degradation
GEF-4 Strategic Programs:	LD SP-1, Supporting Sustainable Agriculture and Rangeland Management LD SP-3, Investing in New and Innovative Approaches Sustainable Land Management
Parent Programme/ Umbrella Project:	TerrAfrica/SIP for SLM in Sub-Saharan Africa
Duration:	4.5 years
Estimated Starting Date:	September 2009
Estimated Completion:	February 2014

PROJECT FINANCING PLAN

Financing Plan:	(USD)
PDF A	25,000
PDF B	700,000
FAO (in cash and kind)	200,000
Governments (in kind)	205,000
UNEP	10,000
Sub-Total	1,140,000
FULL PROJECT	
GEF grant (including IA fee)	7,000,000
PROJECT CO-FINANCING	
FAO (in kind)	351,000
Government of Burundi	6,260,000
- Districts	860,000
- Govt/Partner programmes	5,400,000
Government of Rwanda	6,293,760
- Districts	768,000
- Govt/Partner programmes	5,525,760
Government of Tanzania (U.R.)	2,463,050
- Districts	418,650
- Govt/Partner programmes	2,044,400
Government of Uganda	3,707,800
- Districts	260,800
- Govt/Partner programmes	3,447,000
Partner Programmes and donors	5,433,600

Sub-Total Co-financing	24,509,210
Total Project Cost	32,012,910

Associated Financing (See [Annex 1 Table 3](#) for listings of relevant projects)

Project Signatory Page

The Project is agreed by:

**On behalf of the Government of
BURUNDI:**

**On behalf of the Government of
UGANDA:**

Signature

Signature

Name and Title (printed)

Name and Title (printed)

Date: _____

Date: _____

**On behalf of the Government of
RWANDA**

**On behalf of the Government of
United Republic of TANZANIA:**

Signature

Signature

Name and Title (printed)

Name and Title (printed)

Date: _____

Date: _____

On behalf of FAO:

José M. Sumpsi
Assistant Director-General
Technical Cooperation Department
Food and Agriculture Organization
of the United Nations

Date: _____

OPERATIONAL FOCAL POINT ENDORSEMENT

Country	Name of signatory	Title of signatory	Supervising Ministry	Date
Burundi	Salvator Ndarbirorere	Adviser, Land Planning	Ministry of Environment and Tourism	20/03/2006
Rwanda	Suzanna Uwimana	Directorate of Environmental Protection	Ministry of Lands, Human Resettlement and Environmental Protection	16/03/2006
Tanzania,U.R	A.R.M.S. Rajabu	Permanent Secretary	Vice President's Office	16/03/2006
Uganda	C.M. Kassami	Permanent Secretary to the Treasury	Ministry of Finance, Planning & Economic Development	20/03/2006

COUNTRY ELIGIBILITY

Country	Convention on Biological Diversity (UNCBD)	Convention to Combat Desertification and Drought (UNCCD)	Framework Convention on Climate Change (UNFCCC)
Uganda	Signed 12/06/1992 Ratified 08/09/1993	Signed 21/11/1994 Ratified 25/06/1997	Signed 13 June 1992 Ratified 8 September 1993
United Republic of Tanzania	Signed 12/06/1992 Ratified 08/03/1996	Signed 14/10/1994 Ratified 19/06/1997	Signed 12 June 1992 Ratified 17 April 1996
Rwanda	Signed 10/06/1992 Ratified 18/03/1995	Signed 22/06/1995 Ratified 22/10/1998	Signed 10 June 1992 Ratified 18 August 1998
Burundi	Signed 11/06/1992 Ratified 15 April 1997	Signed 14 October 1994, Ratified 06 January 1997	Signed 11 June 1992 Ratified 6 January 1997

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SUMMARY

The Kagera River Basin is shared by Burundi, Rwanda, the United Republic of Tanzania and Uganda. Maintenance of the Kagera flow regime is vital for maintaining water levels of Lake Victoria and outflow to the Nile, while the riverine wetland areas are vital for deposition of eroded sediments and nutrients and hence maintaining water and pasture quality and associated livelihoods. The natural resources of the Kagera river basin support the livelihoods of some 16.5 million people, the majority rural and depending directly on farming, herding and fishing activities. However, the resource base and the ecosystems are facing increasing pressures as a result of rapid population growth, agricultural and livestock intensification characterised by progressive reduction in farm sizes and unsustainable land use and management practices. The basin's land and freshwater resource base, associated biodiversity and populations whose livelihoods and food security depend on those resources, are threatened by land degradation, declining productive capacity of croplands and rangelands, deforestation and encroachment of agriculture into wetlands.

The overall goal of the project is to support the adoption of an integrated ecosystems approach for the management of land resources in the Kagera Basin which will generate local, national and global benefits including: restoration of degraded lands, carbon sequestration and climate change mitigation, agro-biodiversity conservation and sustainable use and improved agricultural production, and thereby food security and rural livelihoods. The adoption of improved land use systems and resource management practices by the range of land users will be supported by stakeholders at all levels and by participatory and inter-sectoral approaches. To achieve these objectives Kagera TAMP has four components: (1) enhanced regional collaboration, information sharing and monitoring; (2) enabling policy, planning and legislative conditions; (3) increased stakeholder capacity and knowledge at all levels for promoting integrated agro-ecosystems management; and (4) adoption of improved land use systems and management practices generating improved livelihoods and environmental services. Regional cooperation will provide an enabling environment across the transboundary river basin for building local capacities and knowledge and mobilising stakeholders to bring about a transformation towards more productive and sustainable agricultural ecosystems (range, agro-pastoral and cropping). Sustainable management of shared resources of the Kagera Basin and revitalised farm-livelihood systems will generate significant environmental benefits through restoration of well functioning ecosystems and their environmental services, such as water regulation, nutrient cycling, carbon storage and provision of habitats for biodiversity.

LIST OF ACRONYMS

AFRICOVER	Adigital geo-referenced database on land cover for the whole of Africa
ARDCs	Agricultural Research and Development Centres, Uganda
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
ASDS/P	Agricultural Sector Development Strategy/Programme, Tanzania
CAADP	Comprehensive African Agricultural Development Programme/NEPAD
CBD	United Nations Convention on Biological Diversity
CBO	Community Based Organization
CCD	United Nations Convention to Combat Desertification
CDM	Clean Development Mechanism (of Kyoto Protocol)
CSLP	Cadre stratégique de relance économique et de lutte contre la pauvreté, Burundi
COP	Conference of the Parties
RPC	Regional project coordinator/technical adviser, Kagera TAMP
DOE/VPO	Department of the Environment, Vice President's Office, Tanzania
DPF	District project Facilitators
DPSIR	Driving Forces-Pressures-States-Impacts-Responses (LADA Conceptual Framework)
EIA	Environmental impact assessment
FAO	Food and Agriculture Organization of the United Nations
FESLM	International Framework for Evaluation of Sustainable Land Management
FFS	Farmer Field Schools
GEF	Global Environment Facility
GIS/RS	Geographic Information Systems/Remote sensing
GTZ	Deutsche Gesellschaft Fuer Technische Zusammenarbeit- German Technical Cooperation
ICRAF	World Agroforestry Centre
IFAD	International Fund for Agricultural Development
IGEBU	Institut Géographique du Burundi
INECN	Institut National pour l'Environnement et la Conservation de la Nature
ISABU	Institut des Sciences Agronomiques du Burundi
ISAR	Institut de Sciences Agronomiques du Rwanda
IT-PGRFA	International Treaty for the Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture
JFF&LS	Junior Farmer Field and Life Schools
KAEMP	Kagera Agricultural and Environmental Management Project, Tanzania
KARI	Kawanda Agricultural Research Institute, Uganda
LADA	Land Degradation Assessment
LUCID	Land use Change Impacts Dynamics
LVEMP	Lake Victoria Environmental Management Programme
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries, Uganda
MAFC	Ministry of Agriculture, Food Security and Cooperatives, Tanzania
M & E	Monitoring and Evaluation
MDG	Millennium Development Goals
MFPED	Ministry of Finance, Planning and Economic Development, Uganda
MINAGRI	Ministry of Agriculture and Animal Resources, Rwanda
MINAGRIE	Ministère de l'Agriculture et de l'Elevage, Burundi
MINATTE	Ministère de l'Aménagement du Territoire, du Tourisme et de l'Environnement, Burundi
MINITERE	Ministry of Land, Environment, Forests, Water and Mines, Rwanda
MLD	Ministry of Livestock Development, Tanzania
MLHS	Ministry of Lands and Human Settlements, Tanzania
MW	Ministry of Water, Tanzania
NAADS	National Agricultural Advisory Services, Uganda
NAEP	National Agricultural Extension Project, Tanzania
NAP	National Action Plan (of CCD)
NARO	National Agricultural Research Organization
NBI-NELSAP	Nile Basin Initiative - Nile Equatorial Lakes Subsidiary Action Programme
NBSAP	National Biodiversity Strategy and Action Plan
NEAP	National Environment Action Plan
NEMA	National Environment Management Agency, Uganda
NEPAD	New Partnership for African Development
NGO	Non-Governmental Organization
NLUPC	National Land Use Planning Commission, Tanzania

NPC	National Project Coordinator/government project focal point, Kagera TAMP
NPM	National Project Manager, Kagera TAMP
NRL	Land and Water Division of FAO in the Natural Resources and Environment Department
OP	Operational Programme of GEF
ORTPN	Office for Tourism and the Protected Areas, Rwanda
PAFOR	Projet d'Appui a l'Aménagement des Forêts du Rwanda
PAIGELAC	Projet d'Appui a l'Aménagement Intégré et a la Gestion des Lacs Intérieurs du Rwanda
PDF-A/B	Project Development Facility- phase A/phase B
PDRCIU	Projet de Développement Rural Communautaire Intégré de l'Umutara, Rwanda
PES	Payments for Environmental Services
PRA	Participatory Rural appraisal
PRORENA	Projet de Protection des Ressources Naturelles du Parc National de l'Akagera, Rwanda
PMA	Plan for Modernisation of Agriculture, Uganda
PRSP	Poverty Reduction Strategy and Programme
PSC/RPSC	Project Steering Committee (National/Regional)
RELMA	Regional Land Management Unit/SIDA, now merged with ICRAF
REMA	Rwanda Environment Management Authority
RPC	Regional Project Coordinator
RSSP	Rwanda Sector Support Programme
RTAC	Regional Technical Advisory Committee
SCLUPU	Soil Conservation and Land Use Planning Unit, MAFS, Tanzania
SFI	Soil Fertility Initiative
SIDA	Swedish International Development Assistance
SLF	Sustainable Livelihood Framework
SLM	Sustainable Land Management
SPFS	Special Programme on Food Security of FAO
SSFMP	SFI & Soils and Soil Fertility Management Programme of NARO, Uganda
SVP-NBI	Shared Vision Programme (SVP) of the Nile Basin Initiative
SWC	Soil and water conservation
SWMNet	Soil and Water Management Research Network of ASARECA
TARP	Tanzanian Agricultural Research Programme
TAMP	(Kagera) Transboundary Agro-ecosystem Management Programme / Project
TCI/GEF	FAO GEF unit hosted by Investment Centre, Technical Cooperation Department
ULAMP	Uganda Land Management Project
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change

1. BACKGROUND AND CONTEXT

1.1 Natural Resources of the Kagera River Basin

The Kagera River Basin occupies a highly strategic position, its surface area of some 59,700 km² contributing to the capture and largest river inflow (24%¹ equivalent to some 7.5 km³ of water per year) into Lake Victoria, the second largest freshwater lake in the world. The Kagera River (ca. 400 km long), the most remote headwater of the White Nile, is formed by two headstreams, which rise in the East Central African highlands (alt. ca. 2,500m) near the divide with the Congo basin (see Map 1). The Ruvubu rises just north of Lake Tanganyika in Burundi and the Nyabarongo rises in north-west Rwanda. These two main headstreams converge at Rusumo Falls, close to the Rwanda-Tanzania border, from where the Kagera flows north along the border and then abruptly east through the lowland floodplain in Tanzania and Uganda, before entering Lake Victoria (alt. 1145m) to the south of Sango Bay in Uganda. The Kagera River is estimated to contribute 10% of the outflow from Lake Victoria into the Nile, and is important for sustaining the flow of the Nile.

The natural resources of the basin (soils, vegetation and landscapes) vary widely with rainfall and altitude giving four main agro-ecological zones, from the divide with the Congo basin eastwards:

- a wet highland zone in Rwanda and Burundi (alt. 1,900- 2,500m, rainfall 1,400-2,000mm),
- a central, incised plateaux extending into Uganda (alt. 1,500-1,900m, rainfall 1,000-1,400mm),
- the drier lowlands and floodplains (600-1,000 mm) shared by Rwanda, Uganda and Tanzania,
- a narrow zone with increasing rainfall eastwards reaching over 2,000mm on the fringe of Lake Victoria.

The basin lies in the sub-humid agro-ecological zone with a bimodal rainfall, the long rains from late February to May/June and short rains from late September to early December, providing a growing period of 90 to 200 days. The soil parent materials range from extensive schist, sandstone, quartzite or granite and gneissic formations; to intrusive basic rocks and volcanic materials in the highlands; to alluvial and colluvial materials in the marshes and wetlands. The main soil types are consequently Ferralsols (red soils), Acrisols and Luvisols (sandy loam to clay loam soils), Gleysols and Planosols (clay soils), Andosols (volcanic soils) (FAO/ISRIC, 2003). Most of these soils are highly weathered and leached resulting in poor inherent fertility.

The basin vegetation includes a complex of forest and woodland, savannah shrub and grasslands and wetlands, with the majority of the land used for agriculture by farmers and herders. The diverse ecosystems and convergence of lowland (mainly western Guinea-Congolian) and highland (eastern afro-montane) species, provide an array of habitats for multiple species of high global significance. This includes remaining species of mega-fauna in protected areas (and habitats) such as the Akagera National Park, Lake Mburo and the Burigi Game Reserve, as well as the unique tropical biodiversity of the groundwater forests (Minziro, Munene and Rwasina Forest Reserves). It also includes natural forests (such as Gishwati, Nyungwe and remnants of previously widespread riverine forest) with endemic plant and animal species (including those used in medicine, for wild foods and agroforestry, such as *Ficus toningii*, *Markhamia lutea* and *Eritrina abbissinic*). Extensive swampy forests and grasslands, with dense tall grasses and papyrus, are important ecological components of the floodplain ecosystem of the Kagera River, providing important water flow regulation and

¹ Or 30% of the total Lake Victoria inflow if lake surface rainfall-evaporation is included.

buffering functions.

Inter-linkages between the highland and lowland ecosystems are important in terms of water regulation, also for the transfer of nutrients and sediments. These ecological processes are directly affected by human intervention which determines net losses upstream - runoff, erosion, fertility decline - and net gains downstream; where there is a fine balance between benefits in terms of productivity of aquatic and terrestrial systems and risks of sediment/nutrient loading and flooding.

1.2 Land Use and Socio-Economic Context in the Kagera River Basin

The transboundary area of the Kagera Basin is among the most important areas in Africa in terms of agro-biodiversity and food production. The agricultural systems are characteristic of east and central Africa, notably the dryland agro-pastoral system, based on savannah grasslands rich in indigenous plant and animal species, and the intensive, diversified cereal- and banana-based cropping systems. However, the varying ecologies provide for a range of locally-adapted cropping, livestock and fishing activities and livelihood systems that are strongly influenced by water availability and quality.

The range of farming systems and social organization has built on local knowledge generated over its long history of domestication and resource utilisation, evolving from the prehistoric hunters and fisher folk, to sedentary agriculture based on sorghum and finger millet and, subsequently, more intensive systems to meet increasing demands of the growing human populations and their livestock. Nonetheless, the farming system remains essentially subsistence agriculture, with low or negligible purchased inputs, high labour input and limited sale of surplus food and cash crops (banana, maize, coffee, etc.), and livestock products (meat, milk, hides, breeding stock). Limited areas are under commercial farms (sugar cane, horticulture, coffee, tea). Some of the drier areas in eastern Rwanda and the drier belt across the NW Tanzania–Uganda border were, until recently, still used for semi-nomadic pastoralism – but most pastoralists have now settled to adopt other livelihoods. More widely across the basin there is a breakdown in traditional land protocols that regulate grazing.

The farming landscapes and the socio-economic and cultural context vary widely within and among districts and countries. The land use-livelihood systems can be classified in four main types, with several sub-types according to management intensity and biological diversity:

1. Livestock based systems: transhumant/free grazing, paddock/ ranch
2. Mixed systems: agro-forestry, crop-livestock (tethered, zero grazing); crop-fish;
3. Perennial arable/tree based systems: mainly banana and coffee, but also tea, cassava, mangoes, avocados
4. Annual cropping systems – cereal based and integrated to various extents with legumes, tubers and some agroforestry species (e.g. *Grevillea*, *Cedrella*, *Calliandra*).

The livestock sector provides milk and meat to urban markets, however, many livestock products are consumed at home by farmers and herders. In mixed systems, livestock is an important source of manure, especially in densely populated areas, and cattle and small stock are a way of accumulating capital to insure the household against risk. In Rwanda and Burundi, cattle and other small stock were decimated during the genocide and wars, however, in lowland provinces, cattle herds have quickly rebuilt, as large herds were brought back by 'old' refugees from Tanzania and Uganda. Small stock numbers have not rebuilt so fast but are an asset that is more widely owned, especially by women

The traditional banana-based cropping system (#3 above), still present in parts of Tanzania, has three typical land use types in a concentric pattern, with decreasing management intensity and hence fertility with distance from the central homestead: i) the intensive perennial banana

- coffee home garden (*kibanja*), with multi-layers and mixed crop species and varieties (beans, maize, fruit trees) where nutrient cycling is concentrated; ii) small fields of mixed annual crops (*kikamba*) with lower inputs, poor soil fertility and risk of vermin damage; and iii) extensive annual crops (*omusiri*), such as yams and Bambara groundnut, with long fallow periods and uncontrolled burning on low quality grasslands on steep, shallow or sandy soils (*rweya*), these are grazed, cut for mulch in the *kibanja* and for house thatch and provide useful trees (e.g. *Maesopsis eminii*, *Ficus spp*, *Markhamia platcalyx*, oil palm and castor).

The resulting human-induced transfer of nutrients, in addition to variations in soil, land form and hydrology has led to large differences in soil fertility across the basin. Traditional land use systems sustained high productivity with low external resource inputs relying on rotations, fallows, shifting cultivation and transhumance / nomadic livelihoods. Increasing pressures on land resources are leading to changing land use systems, overexploitation of resources and greater reliance on poorer lands for crop and livestock production. In turn, this exacerbates poverty and vulnerability to environmental and health shocks, as well as inability to satisfy basic requirements - food, shelter clothing and access to health services, education and safe drinking water. The human-induced pressures are largely driven by human population growth, but also by poverty (average income of about US\$1/day), illiteracy and the significant migrations of people and their animals that have taken place over recent years due to civil strife.

The 2006 basin population is estimated to be 16.5 million people; it is expected grow to 32.8 million by 2030 based on average population growth rates for the period 1999-2015 of 3%/year, see Table 1 in Annex 13 for details. In Burundi, 46% are under 15 years of age. The river basin covers most of the surface area of Rwanda (80%) and a large share in Burundi (50%) - both among the poorest and most densely populated countries in the world with over 500 inhabitants per km² in the cultivable lands. In Rwanda and Burundi over 90% of the populations are engaged in subsistence farming, with extremely small farms and fragmented plots (the mean area is 0.6 ha; only 2% of holdings exceed 3 ha.). In Uganda and Tanzania, some 80% of the population is rural and again the majority engaged in small-scale agriculture. Due to rural-urban migration, urban growth is rapid, averaging over 4% growth/year in larger cities of Kigali (650,000 persons), Bukoba (180,000 persons) and Mbarara (69,360 persons).

The majority of the rural population in the basin are very poor (few tools, poor housing, small land area, little disposable income); they are unable to invest in improved resources management or education (see Table 2 in Annex 13). They have limited access to improved technologies, information and services (research, credit, reliable markets, inputs and dispensaries). In upland areas, water is scarce both for domestic use and livestock as wells and watering points are mostly in lowland areas, or is sold from kiosks at prices most people cannot afford. In large areas of the basin, fuelwood is also in increasing short supply and alternatives such as paraffin or electricity are only accessible in the few urban centres. Labour is a major constraint, especially due to the severe impacts of HIV/AIDS and malaria, which particularly affects women. Sickness also diverts limited incomes from investment in land for care and medicines. Markets are limited to certain commodities and prices for most agricultural products are extremely low and unreliable, often affected by urban pro-policies and exploitation by 'middle-men'. Insecurity of tenure restrains investment in the land and discourages youth from entering into agriculture due to delays in inheriting land and low potential incomes. As a result of HIV/AIDs and rural exodus, there is a serious generational loss in the transfer of local/ indigenous knowledge (traditional medicines, use/management of local species/ varieties, soil and water management, biocontrol of pests and diseases, etc.). Many households are headed by women, and as a result of the war, in Rwanda women now comprise 60% of the total population.

Poverty in Burundi is particularly severe, where the economy has stagnated as a result of the civil war and insecurity (agriculture provides 95% of food needs and 80% of export income -

largely tea and coffee; subsistence food crops occupy 90% of cultivated land). Refugee movements in recent decades have increased pressures on resources in the basin, increasing actual and potential conflicts between interest groups and countries and pressures on protected areas. Most notably, two-thirds of the Akagera National Park was de-gazetted in response to population pressure after the civil strife in Rwanda in 1994, for use by return refugees as smallholder arable farms. Resettlement of refugees into these new areas has created major problems as the land resources are very fragile, settlers do not hold indigenous knowledge and wildlife in the park are endangered by reduced habitat area and poaching.

The highly variable biophysical conditions and varied land use-livelihood systems developed by different socio-economic and cultural groups, through local experiences, knowledge and exchange of germplasm and driven by needs and opportunities faced by the growing populations, has led to the conservation and development of characteristic highly adapted species (drought resistant plant species, mobile animal races) and high within-species diversity in the Kagera basin. However, this agro-ecosystems and biodiversity heritage is increasingly threatened by overexploitation of resources and resulting degradation which are influenced by the transboundary nature of the basin.

1.3 Land Degradation Threats and Causes

As confirmed by transects, participatory rural appraisals and consultations with stakeholders in representative agro-ecosystems throughout the basin during the PDFB, the increasing human and animal pressures in the Kagera basin have led to intensification of land use and the adoption of unsustainable practices, notably:

- overstocking and overgrazing of pastures and rangelands, also excess bush burning;
- continuous cropping, with reductions in fallow and rotations, reduced crop diversity in response to markets (food and forage species/ varieties), repetitive tillage, frequent burning, and soil nutrient mining (lack of nutrient restoration practices);
- encroachment of subsistence cropping into more fragile, drier areas, previously used/reserved for pasture and grazing, also into the wetlands;
- over-exploitation of forests and woodland, especially loss of riverine forest, and unsustainable harvesting (timber, fuelwood, charcoal, brick making, etc.); and,
- communal areas, such as forested highland and riverine areas, grazing lands, riverbanks and cultivated steep slopes, are particularly affected by overexploitation and degradation.

These changing land use practices have been accompanied by neglect of the importance of agro-biodiversity and the ecological functions to which it contributes. Existing local knowledge does not encompass how to cope under such changed circumstances, nor in response to insidious, unprecedented environmental changes / variations due to climate change. Population pressures, insecurity and the struggle to meet short term needs have compromised the capacity of farming communities to sustain the land resources even though it is in their best interests.

The resulting land degradation and associated losses of biodiversity and ecosystem structure and functioning are serious problems affecting the sustainability of livelihoods in the Kagera River Basin. The main degradation factors include:

- extreme deforestation and loss of woody biomass, timber and non-wood forest products;
- extensive, pervasive and, in some areas, severe soil erosion, nutrient mining and declining soil quality affecting land potential and productivity of crop, pasture/range and forest lands;
- loss of agricultural biodiversity including habitats, species, genetic resources,

- domesticated species and the wild associated species that provide beneficial functions (pollinators, predators, soil biota);
- pervasive biomass burning, through bush fires, burning of crop residues, cooking with firewood, reducing vegetative cover and soil organic matter;
- siltation of rivers and lakes, with large sediment and nutrient loads entering Lake Victoria and invasion of water hyacinth (eutrophication and effects on aquatic life);
- loss and sedimentation of wetlands resulting in loss of their important regulatory and buffer functions;
- loss of other vital ecological services (e.g. nutrient cycling, carbon sequestration, biological control of pests and diseases and maintenance of the hydrological regime).

Deforestation is caused by encroachment of agriculture and increasing demands of the growing population for fuelwood, charcoal, timber and construction purposes. Currently, the majority of the basin's population depends on locally gathered fuelwood for their energy. Wood is also used for cooking in schools and other public institutions and for brick making and agro-processing. Deforestation has been extremely severe over the last few decades, especially in Rwanda and Burundi, including loss of high altitude forests, riverine forests, and lowland forest/woodlands in parks and reserves. During the period 1960-2000, Rwanda lost 63% of its natural forests: 59% of its high altitude forests and 83% of its riverine forest (from 150,000 to 25,000 ha.). Remaining forests, woodlands and trees in savanna systems and on-farm across the basin are facing severe pressures, valuable indigenous trees (e.g. *Podocarpus spp.* and *Markhamia lutea* for timber, *Ficus*, *emitongole*, *eminyinya*, *enkukuru*, *obukagati*, used for making local products), wildlife and non-wood forest products, including diverse medicinal plants, are threatened. Conservation of both natural and planted forests, especially of remnants of riverine forests and high altitude forests is vital to protect the hydrological regime and unique habitats.

Loss of Productivity on Agricultural Land: Soil erosion is extensive across the diverse farming systems and terrain units, with overall moderate sheet and rill erosion; and severe erosion (some gullies) on hilltops, steep slopes. The poor inherent fertility of soils in the Kagera, soil erosion, imbalances in exchangeable bases (especially K and Mg) and increasing acidity are major production constraints. Soil fertility decline is also widespread, resulting from continuous cropping and crop specialisation by resource poor families (nutrient mining) in their struggle to sustain the family and produce marketable surpluses, and by their lack of knowledge and/or application of integrated crop-livestock and agroforestry farming systems and practices (poor vegetative cover, loss of organic matter, inefficient use of rainwater, inappropriate use of fertilisers). The situation is exacerbated by insecurity of land tenure, fragmentation of land holdings, decreasing cattle ownership and hence availability of manure (< 20% of households in some areas), low resource endowments of smallholders and limited marketing opportunities. The result is an all too familiar spiral of degradation, with poor soils and vegetation cover impacting on agricultural productivity, ecosystem resilience, the hydrological regime and food insecurity and poverty.

Declining soil fertility and crop specialisation also have a direct influence on increasing incidence of crop pests and diseases. The major ones cited include: leaf pests such as caterpillars, army worm; banana weevils and nematodes, *Sigatoka* and Panama (*Fusarium* wilt), coffee rust, cassava mosaic virus, mealy bug and green mite. Increasing climatic variability and lack of knowledge of farmers to cope with unreliable rains are also exacerbating the situation. (Farmers cited delays in onset and early cessation of rains and an extended drought/famine in the lowlands in the period 2000 – 2005.) Erosion and soil fertility are among priority problems cited by communities. The use of inorganic fertilizers is well below the recommended rates required to prevent nutrient mining under intensive cropping systems, and needs to be promoted as part of integrated plant nutrient management strategies to avoid losses by runoff and leaching and optimize effectiveness.

Pasture/Range Degradation: The pastures are also facing severe erosion and productivity decline due to overstocking (resulting in changing pasture composition with less palatable and more invasive species and reduced soil cover), shortage of watering points which leads to high concentrations of livestock around those available and accelerated runoff from higher areas onto lowland pastures with risks of erosion, flooding and siltation. Transects conducted during the PDFB in pasture/rangelands showed trampling and compaction by livestock, sheet and rill erosion on hilltops and steep slopes, and in some places gullies, exposed tree roots and pedestals. Farmers cited problems of declining cattle productivity due to degraded pastures and increased diseases, shortage of grazing near urban areas and conflict between herders and farmers for land and crop residues (nutrient cycling or cattle feed).

There has been a gradual sedentarisation of pastoralists, due to reduced availability of grazing lands and corridors as result of encroachment of cropping and recent modernisation policies of the governments that tend to restrict movements, in conflict with traditional pastoral management systems based on migrations for water and grazing. Ranches have been established where some of the pastoralists can be employed. However the majority are obliged to adopt seasonal cropping and/or fishing livelihoods, for which they have no traditional knowledge or management systems, and pastoral livelihoods face the danger of extinction.

Loss of agrobiodiversity and associated functions is strongly related to the above land use pressures, resulting land use changes and degradation of soils and vegetation. It is accompanied by loss of related knowledge. The estimated 134 (critically) endangered and vulnerable species - of which 29 mammals and 15 birds - in the four countries is indicative of the pressures on habitats and species. The effects on agrobiodiversity in the Kagera basin vary with the farming system see Annex 4:

- a) **Reduced diversity of cropping systems:** Replacement of indigenous/local crop varieties by introduced commercial varieties (e.g. nematode and disease resistant varieties of banana, cassava, maize, beans). Loss or neglect of traditional varieties, including crop wild relatives and landraces, such as simsim, millet, sorghum, sweet bananas, cowpea, sunflower, pigeon pea, Lima and Bambara beans, cassava and yams, wild medicinal plants and local fruits and vegetables due to fire, overgrazing and cultivation) and wetland destruction. Decrease in diversity of indigenous tree associations in banana/coffee farms. Loss of other indigenous species found in cultivated areas. Increasing problems of invasive crop weeds due to specialisation.
- b) **Changing composition of pastures and rangelands,** with associated loss of biodiversity and habitats, through excess fire and overgrazing with reduced abundance of palatable/nutritious grasses (such as *Braccharia spp.*, *Setaria spp.* and *Hyparrhenia spp.* and *Thephedes triandra*) and legumes (such as *Glycine spp.*, *Desmodium spp.*, *Siratro spp.* and *Centrocema spp.*) and increased colonisation by thicket with hardy grass species (such as *Imperata cylindrica*, *Cymbogon spp.*, *Sporobolus spp.* and *Panicum maximum*) and by woody shrubs (such as *Acacia hockii*, *Combretum spp.*, *Belanites spp.* and *Lantana camara* (now a serious invasive species in Rwanda).
- c) **Replacement of the indigenous livestock breeds** especially the long-horned Ankole cattle (a cross of indigenous long horned Sanga and Zébu) by higher producing cross-bred cattle (such as the Pakistan *Sahiwal* Zebu, French Frisonne, Friesian Holstein, European Jersey, as well as trypanotolerant N'dama from West Africa and *Sukuma* Zebu from Tanzania) and of local races of small ruminants and poultry by introduced races to improve productivity.
- d) **Reduced soil biota and biological functions** due to soil degradation and its effects on soil organisms, the soil food web, and its resilience. It is increasingly recognized that important functions of biological tillage, nutrient cycling, carbon sequestration,

infiltration and soil moisture retention are negatively affected through continuous disturbance by hoe and plough cultivation, reduced crop rotations, nutrient mining, loss of organic matter and protective vegetation cover (removal and burning). Effects on soil biodiversity have not been researched in depth in the basin and are not in general recognized by farmers, but studies with farmer field schools (FFS) in Bukoba District, Tanzania, have shown direct relations between soil biological activity and practices of tillage, organic matter and soil moisture management.

- e) **Homogenisation of habitats and risk of loss of crop- and livestock-associated diversity**, such as pollinators (reduced habitat; competition by introduced honey bee species), beneficial predators and biological control mechanisms provided by biodiverse systems. Agricultural encroachment into wetlands, riverine woods, riverbanks and reduced fallow lands reduces the habitat and hence populations of such beneficial species. FFS study plots in Bukoba district have shown that reduced plant diversity, rotations and beneficial interactions (pest-predator, plant-soil nutrients) leads to reduced resistance to diseases and pests e.g. in bananas and maize. Communities have noted reduced populations of pollinator species (small bees, butterflies, beetles) due to spraying pesticides to kill birds and mosquitoes, forest clearing and loss of flower species, harvesting of honey using fire or toxic chemicals.

Water Resources and Wetland Degradation: Soil erosion from degraded arable and pastures also from use of riverbanks (e.g. livestock trampling, brick making) is causing serious increases in sediment and nutrient loads of waterways resulting in siltation and eutrophication of rivers and lakes and affecting wetland function. In addition to deposition of suspended soil particles, organic matter and regulation of flow, water flow through wetlands where vegetation is well managed, results in improved water quality [significant reduction in inorganic compounds (up to 50% for total N; 10% for total P) and fecal coliforms, LVEMP, 2001)]. However, wetlands are being increasingly encroached upon for cropping/grazing and resulting poor water quality is cited as affecting fish-stocks and diversity (also influenced by overfishing). Effects on the hydrological regime include changes in water courses, decreasing depth, changes from permanent to seasonal flow, drying up of valley bottoms with effects on pumped wells, drying of permanent water sources and increased incidence of floods as a result of impaired wetland function.

Water hyacinth (*Eichhornia crassipes*) has become a major invasive weed in Lake Victoria and its tributaries since the late 1980's and is a serious threat to aquatic ecosystems, affecting fish stocks and water quality. LVEMP research shows that resurgence and proliferation of water hyacinth is related to pollution and nutrient loading from the catchments. Various activities have been implemented, with support from international partners, to review and develop a Regional Water Hyacinth Management Plan for Lake Victoria. The Kagera river system is a major source of the invasive weed, and the Institute of Agricultural Sciences of Rwanda (ISAR) also conducted a biological control program through a *Neochetina* weevil species rearing and release effort in 2000-2002, with funds and technical support by Clean Lakes, Inc. – Uganda, the USAID Greater Horn of Africa Initiative and the above regional programme. LVEMP-II plans a further water hyacinth control project.

Atmospheric Pollution: Studies by the Lake Victoria Environmental Management Programme (LVEMP) identified burning as a major source of chemicals, especially phosphorous, introduced from the atmosphere into the lacustrine system. Presence of other chemicals in aquatic systems, although relatively low is likely to be partly associated with pesticides used for intensive horticulture and for some cash crops such as coffee, tea, sugar cane, cotton. The presence in the atmosphere of DDT, Lindane, Endosulfan residues, is likely to be largely from mosquito and other insect control using cheap black market stocks of these obsolete and banned organic pesticides (LVEMP).

Reduced Biomass and Carbon stocks: Widespread practices of burning of grasslands, to

generate pasture regrowth and control pests, and burning of crop residues to reduce disease outbreaks, and tillage practices, crop harvesting, reduced fallows and expansion of arable lands into forests and pastures, are resulting in severely reduced biomass. Some 85-95% of households use biomass for cooking and lighting, mainly in the form of wood, but also charcoal, and where these are more limited as in parts of Rwanda and Burundi, shrubs, animal dung and plant detritus. The large scale and long-term effect of these practices is to reduce carbon stocks in both soil and perennial vegetation, increasing GHG emissions to the atmosphere and contributing to climate change. The losses in vegetation cover, biomass and soil organic matter (soil carbon), reduce soil aggregate stability and infiltration capacity, causing increased runoff and soil erosion, leading to loss of productivity and biodiversity. Consequences are increased risk of flash floods, flooding downstream, reduced recharge of soil moisture and ground water resources, and in the long term enhanced drought risk.

Climate Change: Climate change models for the region predict increasing rainfall in humid areas, lower rainfall in dry areas and extended drought periods. Predictions of climate change impacts in the Kagera basin are contradictory (as with models for other areas) but largely in accordance with a wider study on anticipated impacts of climate change in East Africa². Rwanda expects an overall reduction of rainfall, but Burundi between 3 and 10% higher rainfall. Throughout Tanzania, mean daily temperatures are expected to rise by 3.5°C, while Burundi expects an increase of 0.2°C every 10 years. This could lead to heat stress, particularly for exotic, high yielding cows, reducing the area where high yielding dairy cattle can be economically reared. Maize yields are expected to fall by 17 % in the Tanzanian part of the Lake Victoria basin, and Burundi expects a slight reduction in yield of beans, maize and sweet potatoes. Disease and insect pest occurrence is also expected to increase. Rwanda expects a reduction of agriculture/ rangeland productivity. Although the carrying capacity of grasslands could increase in areas of increased rainfall, increased foliage but reduced crude protein content could reduce grazing quality and hence meat and milk production. Farmers would need to adjust their management to ensure livestock have enough grazing all year round. Poor people's livelihoods are particularly vulnerable to climate change, as they tend to live in the highest risk areas and lack economic & social resources and capacity to adjust to rapid changes in long-term conditions. Local economic and social conditions in many parts of the Kagera Basin have already driven poor people to marginal areas and forced them to over-exploit natural resources to support their livelihoods. Climate change from global warming and other local factors (overexploitation) is likely to further erode the natural resource base, and could reinforce conditions of poverty.

Thus, land degradation in the basin is highly variable in spatial and temporal extent as well as intensity. Moreover, poor and most marginal rural people are affected disproportionately. The natural resource base and environmental integrity of the Kagera Basin and the local knowledge systems are threatened by these socio-economic and environmental pressures, also by the resource-depleting survival strategies of the rural poor to meet their short-term needs. There are upstream-downstream impacts and serious transboundary environmental implications.

1.4 Root Causes of Land Degradation and Barriers to Sustainable Land Management

Past interventions to alleviate land degradation in the Kagera basin have, on the whole, been sectoral, and as elsewhere in the world, tended to focus on erosion control and on blaming the practices of local land users, in particular, the poor and most marginal rural people, for their unsustainable practices. Stakeholders across the basin acknowledge that the local land users hold one of the keys to reversing land degradation, and there is a need to work directly with

² Paper by Orindi, V.A. and Murray, L.A. (2005)

the farmers and communities affected by, and causing degradation through their mismanagement. However, it is also widely recognised that land degradation is not purely a local problem; there is a need to look beyond those proximate causes to the root causes (indirect or primary drivers) which are forcing land users to overexploit their land resources in order to survive. This includes the demographic and land use pressures mentioned above, as well as the economic, technological, political, institutional and cultural drivers.

A key to maintaining the value of the natural resources is to ensure that the local resource users and stakeholders benefit from their efficient and sustainable exploitation of the resources and ecosystems. This has not been the case in the Kagera basin, partly due to **limited government support and lack of incentives** for natural resources management. There are weak governance mechanisms for common pool land and water resources and many resource users do not participate in decision making, especially the poor, women and youth. This exacerbates conflicts over use of resources, e.g. upstream – downstream. Prices for agricultural products are extremely low, and with limited local agro-processing and markets for alternative products, land users do not have the capacity to invest (labour, cash) in long term management strategies and are discouraged by lack of security of land tenure.

In the region, it is recognized that institutional deficiencies and low human capacities have led to **inadequate policies, laws and regulations** and their enforcement and poor **extension services**³. Recent decentralization processes in all the Kagera TAMP countries provide a tremendous opportunity for community-based planning and targeted development actions. However, **local government land resources planning capacity remains weak** (few staff, limited training and equipment), sectoral and ineffective in terms of bringing about a change from unsustainable to sustainable land use and resources management. There has been some development progress, for example, in limited areas support for land registration, improved water supplies, environmental protection, crop and livestock production, local organisation, access to inputs and services. However, sectoral efforts have also led to confused messages, inefficiencies and a failure to address the wide adoption of unsustainable farming systems and management practices. Even though national poverty reduction strategies and programmes (PRSP) show the need for integrated development processes, in general, **activities remain uncoordinated** driven by separate land, environment, agriculture, forest and water policies, institutions, strategies and action plans.

Transects and PRAs conducted with communities during the PDFB captured some of the main threats to and effects on agricultural biodiversity of current agricultural systems and resource management strategies. However, they also demonstrated a general **lack of awareness and understanding of land users and local governments** of: i) the effects of their practices on land degradation and biodiversity loss; ii) impacts of loss of habitats and species, especially loss of associated species that contribute to critical ecological functions (e.g. nutrient cycling, carbon stocks, pest and disease control; and iii) of improved techniques for preventing degradation and restoring degraded soils and opportunities for generating socio-economic and environmental benefits from more diversified, sustainable farming systems, including the conservation of agricultural biodiversity. Land users often do not have access to such knowledge as they are not well organized and capacities of agricultural, pastoral and forest extension services are very limited (staff, resources, remoteness). The governments recognize the need to **strengthen collaboration with civil society and private sector**, for example, in Uganda the National Agricultural Advisory Services (NAADS) is supporting and working through private service providers which replace the former extension services.

These policy and institutional weaknesses influence the capacity of countries and stakeholders across the basin to adopt sustainable land management practices, and thereby, enhance

³ Review of reports from the Lake Victoria Environmental Management Programme (LVEMP).

livelihoods and food security and generate global benefits, including preventing land degradation, restoring the structure and functions of ecosystems and the water regulatory, carbon storage and other services provided.

1.5 Policy Context

Regional Policy context for Kagera TAMP

The Kagera river basin is managed and supported through the **Nile Basin Initiative - Nile Equatorial Lakes Subsidiary Action Programme (NBI-NELSAP)** which in addition to Kagera countries includes Congo D.R., and Kenya, as well as downstream Egypt and Sudan. The Council of Ministers (NEL-COM) provides oversight of NELSAP, policy advice and guidance; the Technical Advisory Committee (NEL-TAC) reviews the project portfolio and provides technical guidance to NEL-COM, the coordinating unit (NEL-CU) is responsible for delivery and information sharing. Expected outputs include a set of investment projects, demonstrated benefits from cross-border cooperation in poverty-focused development and strengthened cooperation at sub-regional level. Kagera TAMP management, for coordination purposes, should share information with and seek policy guidance, as required, from NEL-TAC and NEL-CU. Two of NELSAPs seven technical assistance projects are of particular relevance to Kagera TAMP, see below.

The East African Community (EAC) (recreated in 2000) provides a framework for extensive political cooperation and integration, among Tanzania, Uganda and Kenya (which share Lake Victoria) as well as Burundi and Rwanda which have both recently joined. EAC has established the **Lake Victoria Basin Commission (LVBC)** to manage the entire basin area, including the Kagera, and in this regard, had already invited Burundi and Rwanda in 2003 to sign a MoU to facilitate cooperation in this venture. The LVBC was launched in July 2005 and became effective in June 2006, with its seat in Kisumu City, Kenya (previously, since 2001, the mandate for coordination was with the [Lake Victoria Development Programme \(LVDP\)](#)). It is envisaged that the LVBC could provide the appropriate institutional mechanism for taking over responsibility for transboundary cooperation and hence sustainability of management of the Kagera basin.

In the **Environment Programme and Action Plan of NEPAD** (New Partnership for African Development), land degradation is a major area of attention, alongside biodiversity conservation, drought and climate change mitigation, protection of fragile ecosystems and the ozone layer. **NEPADs Comprehensive Africa Agriculture Development Programme (CAADP)** is also a key entry point for integrating SLM in agriculture and natural resources management and with mainstream national priorities of poverty eradication, improved food security, accelerated economic growth and development, promotion of women in development and international Millennium Development Goals (MGDs). Kagera TAMP is part of the umbrella TerrAfrica/SIP program for sustainable land management in Sub-Saharan Africa and through this process will ensure that its activities to promote Sustainable land and agro-ecosystems management will be well integrated in NEPADs action programme, in line with its long term objectives (poverty eradication, sustainable growth and development, promoting participation of all groups, especially women in development) and priorities:

- creating an enabling environment for sustained economic growth of >7%/year over 15 years;
- reduction of the population living in extreme poverty by half, between 1990 and 2015;
- implementing national strategies for sustainable development by 2005 so as to reverse loss of environmental resources by 2015.

The countries sharing the Kagera Basin have all adopted various national strategies and action plans that address sustainable management of natural resources, biodiversity conservation, agriculture, forests, desertification and climate change mitigation. Land degradation is recognized by all stakeholders as a major threat to the natural resource base and to livelihoods. Ratification of the **Convention to Combat Desertification (UNCCD)** in the late 1990s by the four countries and subsequent development of **National Action Programme**

(NAPs) for its implementation has led to raised awareness from national to local levels, including of the close links between degradation and poverty. These NAPs are intended to be largely implemented through local and district level planning and actions, however, **financial and human resources are extremely limited**, except through specific technical assistance/investment projects.

Loss of biodiversity has been widely recognized in the environmental sector, especially for the protection of large fauna, birdlife and indigenous forest species through national parks and forest reserves. During the decade since ratification of the **Convention on Biological Diversity (CBD)** by the Kagera countries, there has been raised awareness of the importance of biodiversity and the ecosystem approach. **National Biodiversity Strategies and Action Plans (NBSAPs)** have been prepared in each country but besides some targeted studies and activities, there are limited resources for their application. Moreover, it is only recently that the loss of agricultural biodiversity and its impacts on food security and livelihoods have been highlighted and, to date, recognition and action remains largely at international level and among a few individuals involved in national level decision making, plans and assessment. This includes, for example: national contributions to the **CBD Programme of Work on Agricultural Biodiversity**; the **FAO International Treaty for the Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture (IT-PGRFA)** and national reporting to FAO global assessments of the **State of the World's Domestic Animal Diversity** and **State of the World's PGRFA** and implementing the resulting plans of action.

In addition actions have been developed in each country under the **Framework Convention for Combating Climate Change (UNFCCC)** and the **Ramsar Convention**.

The four countries have decided on the importance of working together to address the issues of land degradation across the basin which have global environmental implications and are transboundary in nature requiring coordination and collaboration among countries and sectors, as well as coherency among the various national strategies and action plans. The **key / critical transboundary issues** for eventual inclusion in Kagera TAMP, identified during a regional meeting with decision makers, planners and projects during the PDFB (Entebbe, November 2005) were:

- control of soil erosion and sedimentation;
- control of water hyacinth
- reduced pressures on wetlands, management of water resources and links with health;
- control of bush fires, reduction in biomass burning;
- conservation of agricultural biodiversity;
- control and management of cross-border livestock movements and disease;
- control of transboundary transmission of crop pests and diseases;
- impact of (returning) refugees, migrations and settlement expansion on land resources; and
- reduction in illicit exploitation of resources in protected areas and wildlife management.

As agreed with the Regional Project Steering Committee (PSC), these transboundary issues will be addressed to a greater or lesser extent by Kagera TAMP (see project description, Outcome 1, Output 2), taking into account support through other projects or mechanisms, notably:

- control of water hyacinth will be addressed by LVEMP-II through expansion of relevant actions from the current focus on Lake Victoria to upstream branches of the Kagera River;
- wildlife management and control are to be directly addressed through protected areas interventions, though Kagera TAMP should contribute to stakeholders and partner consultations and solutions to reduce pressures and generate opportunities for

neighbouring farming communities and to the development of required policy, programme and legal support; and,

- effects of water quality on health should be addressed by health and water sectors.

1.6 National Policies and Priorities

In addition to the referred national plans to implement the environmental conventions, also important are the National Environment Action Plans (NEAPs), National Agricultural and Livestock Strategies and related plans/programmes, and the Poverty Reduction Strategies and Programmes (PRSPs). The latter have been developed in accordance with country decentralisation processes and recent targets to meet the Millennium Development Goals (MDGs) (especially [#1] eradicate extreme poverty and hunger; and [#7] ensure environmental sustainability). Kagera country PRSPs have identified agriculture as the lead sector in poverty reduction and priority attention is placed on increasing productivity and reliability of production, inter alia, through improved water management and soil fertility re-capitalization. An outline of relevant national policies, laws and priorities is presented below and in more detail in Table 1 of Annex 7.

In Rwanda, the **Poverty Reduction Strategy (PRS)** links human development with environment and natural resources management, and recognises the need to accompany agricultural/rural development by environment protection (soil and water conservation, reforestation, rational use of wetland, water, energy). A new **Agriculture Sector Policy (2004)** and a **Strategic Plan for Agricultural Transformation** have been adopted for intensifying sustainable production systems and promoting agri-business and thereby contributing to poverty reduction and food security. This is linked to NEPADs Mid-term Investment Plan and aims to shift from subsistence agriculture to an agriculture sector integrated with markets. Rwanda has confirmed that reversing land degradation and biodiversity loss in the Kagera basin is a top priority in view of the serious impacts on resources and livelihoods. In addition to environmental conservation, Kagera TAMP actions should improve crop and livestock production and forestry and thereby improve income and food security.

Recognizing that the Kagera basin covers almost 80% of the country, initially during the PDFB a focus was placed on the three lowland provinces of Umutara, Kibungo and Kigali Rural adjacent to the Kagera River (since the 2006 administrative reform, now largely Eastern Province). However, for the full GEF project, the government recognizes the importance of addressing the serious land pressures and causes of erosion and sediment production in the highlands, in addition to the downstream implications. As a result the diagnosis was extended into the highlands and it has been agreed that Kagera TAMP will also target the main tributaries and catchments feeding into the Kagera River, in the new Eastern, Southern and Northern Provinces.⁴

In Burundi, although over 20% of the Kagera basin lies in Burundi, and represents some 50% of the country, Burundi was not a beneficiary of the PDFB due to security situation in the country when the PDFB was developed. However, during the Entebbe workshops in November 2005, the Burundi delegates from the Ministries of environment and agriculture confirmed their strong interest in being a project partner and subsequently the PSC meeting (Rwanda, Uganda, Tanzania) endorsed Burundi's involvement, subject to agreement by the GEF family and co-funding arrangements.

Through the **Interim Poverty Reduction Strategy (2003)** the Government of Burundi seeks to support the reintegration of displaced persons and other victims of conflict into agricultural

⁴ Through Rwanda's 2006 administrative reform, Eastern Province merges Umutara, Kibungo and the southern region of Kigali Rural; Southern Province merges Butare, Gikongoro and Gitarama provinces; and Northern Province merges Byumba, Ruhengeri and the northern part of Kigali Rural.

production, rehabilitating and developing rural and agricultural infrastructures, supporting micro-watershed management, sustainable farming approaches, resource use planning for protection areas and buffer zones, land titling and community management. The **National Strategy for Food Security (2003)** recognizes as priorities: raising production, productivity and diversifying sources of incomes in rural areas, improving the quality of services and their delivery to farmers, promoting sustainable land use and improving natural resource management through improved farming practices. Efforts are being made to implement the **National Environment Strategy (1997)** and strategies/actions to meet the goals of the biological diversity (NBSAP, 2000), climate change, desertification and Ramsar conventions; however, efforts are constrained by lack of resources and capacity. Relevant reforms include: legal instruments to improve agricultural planning and management, enacting a **Land Law**, updating national policy for managing natural resources and the environment and involving communities to help restore and protect vulnerable ecosystems, adoption of a **National Environment Law (2000)** and developing a **National Forest Policy (draft)**.

In the United Republic of Tanzania, the **National Strategy for Growth and Reduction of Poverty (1998)** is the guiding framework that links poverty eradication with environmental degradation and the agriculture sector. The **National Environmental Policy (1997)** is an umbrella framework that promotes socio-economic development while maintaining environmental quality and resource productivity, supported by a set of environmental laws and specific policies on land, water, resources, forest and wildlife. Land degradation and drought are priority problems implemented through the **National Environment Action Plan (1994)**, the **Forestry Action Plan (1994)** and the **Action Plan arising from the Soil Fertility Initiative (2000)**. The **Agriculture and Livestock Policy (1997)** promotes integrated, sustainable use and management of natural resources and improving the wellbeing of those dependent on agriculture. It is implemented through the **Agricultural Sector Development Strategy (2001)**. Following CBD ratification a **National Conservation Strategy (draft)** was developed and **NBSAP (2000)** which gives clear directions towards biodiversity conservation and links to **NAP-CCD** including promotion of sustainable development in areas adjacent to protected areas and rehabilitation of degraded ecosystems. Through the **Land Act and Village Land Act 1999**, village councils are to categorize their land according to pre-existing or new land use plans to be approved by the village assembly and subject to advice of district councils.

In Uganda, the **National Environment Management Policy (1995)** is the umbrella framework that recognizes the importance of conservation and restoration of ecosystems, biodiversity and ecological process and of enhancing public awareness and local participation in environmental actions. Linkages between poverty and environment and inter-sectoral actions are implemented through the **National Poverty and Environment Action Plan (PEAP)** and its **District Development and Environment Action plans (DEAP)**. The draft **National Land-use Policy** aims to fill a gap in integrated, harmonized land-use planning/management across sectors and among land users/ stakeholders; and the draft **National Soils Policy** aims to maintain productivity of land /agro-ecosystems. The **Plan for Modernisation of Agriculture** is in line with the PEAP aiming to increase production/unit area and to promote sustainable use and management of natural resources forest, wildlife, livestock and rangeland. This is supported for example by the **Livestock Policy** which sets optimum stocking rates to prevent over-grazing and soil compaction, by the multi-sector **Food and Nutrition Policy (2003)** and the **National Policy for the Conservation and Management of Wetland Resources (1995)**, aiming to maintain ecological and socio-economic functions of wetlands through optimal use of resources and partial exploitation for economic development.

As articulated in the referred policies, strategies and action plans, Kagera TAMP, as a coordinated programme aiming to promote sustainable land and agro-ecosystems management (SLaM) across the basin and thereby generate local and national benefits and global environmental benefits, responds to key priorities of the countries sharing the Kagera

river basin. It will contribute to the implementation of these various national strategies and plans in a coherent, harmonious and effective way, through working closely with local governance and communities to build the capacity of technical and district level staff in promoting inter-sectoral approaches for SLaM. Kagera TAMP will also work at international level to harmonise strategies across the basin for the generation of global environmental benefits through reversing land degradation, conserving biodiversity, enhancing carbon sequestration and thereby contributing to protection of the shared water resources.

1.7 GEF Operational Programme Context

A preliminary in-country and transboundary diagnostic analysis was prepared during the PDFB through consultations with stakeholders and development of a detailed information base through: transects and PRAs in 9 representative areas and communities in Rwanda, Tanzania and Uganda; ten district level stakeholder meetings; and analysis by a range of technical experts (soil, agriculture, forestry, socio-economics, and others) and by the national Technical Advisory Committees (TACs). This diagnostic provided the basis for the formulation of this project including specific actions (policy, legal, institutional reforms or investments) for adoption at national level, within a harmonized context for the overall river basin, to address the priority environmental and transboundary concern(s), to restore the sustainability of the agricultural ecosystems and protect the shared Kagera River and its basin in the long-term.

The proposed project **Transboundary Agro-Ecosystem Management Programme for the Kagera River Basin (Kagera TAMP)** was initially designed to be consistent with the objectives of the GEF-3 Operational Program on Sustainable Land Management (OP#15), as it adopts a landscape approach and integrates ecosystem-based concerns with human activities based on land use (agriculture, rangeland, forest /woodland management). In rescheduling the project under GEF-4, efforts have been made to ensure the project design is consistent with objectives of the Land Degradation focal area strategy and Strategic Program for GEF-4. Moreover, it will contribute to the long term goal and intermediate results of the umbrella program - TerrAfrica/SIP for SLM in Sub-Saharan Africa: IR-1 through the identification and demonstration of innovative SLM approaches and their implementation (outcomes 3 & 4); IR-2 through building capacity and skills of communities and government for intersectoral planning, management, legislation and harmonized policies (outcome 2), and generation of knowledge and coordination mechanisms at community, national and river basin levels (outcome 1).

It will catalyze inter-sectoral partnerships between institutions in all four countries to overcome barriers to SLM, including enhancement of institutional and human resource capacity for land use/resources planning.

Strategic Program 1 (SP-1 element b) is the selected entry point as the project's main focus is on restoration of the health and functioning of the different agro-ecosystems in the Kagera basin through promoting sustainable land and agro-ecosystem management. SLM will be promoted to overcome the severe soil erosion and loss of fertility through use of a landscape approach and integrating ecosystem-based concerns with human land use activities (agriculture, rangeland, forest/tree management). The project's activities will address the root causes and negative impacts of land degradation on ecosystem stability, functions and services as they affect local people's livelihoods and economic well-being, and to identify and find ways to overcome bottlenecks. **SP-3** will also be addressed through innovative incentive mechanisms that encourage wide adoption of SLM practices.

Specifically, the project will contribute to **Strategic Objective SO-2** by demonstrating and up-scaling successful, innovative and cost-effective SLM practices and investments that should reduce the extent and severity of degradation and deforestation, enhance productivity and resilience of agricultural systems and generate socioeconomic/livelihood benefits for

local land users as well as global environmental benefits. Capacity building will be promoted through farmer field school approaches for adaptive management of SLM practices, and through community planning and integrated ecosystem approaches for the range of cultivated and grazing lands, forested areas and wetlands in the basin. SLM activities are expected to be scaled up in 46 micro-catchments and 35 agro-ecological units representing threatened or degraded common property resources (pasture/range, wetlands, riverine forest, buffer zones). Innovative practices will include: adapted conservation agriculture systems and improved access to required inputs; integrated crop-livestock systems; viable integration of adapted trees/agroforestry practices into catchment management (fuel, timber, C-sequestration, non-wood forest products, etc.). Replication of diversified land use systems/ practices and government support will be enhanced through monitoring (on-farm, downstream, and between land uses) and demonstrating the multiple local, national and global benefits gained through improved farm-livelihood systems and catchment management approaches (sustaining/restoring the resource base, biodiversity conservation, ecosystem functioning, provision of goods and ecosystem services and reduced risks- climatic variability, food insecurity, etc).

The project will contribute to **Strategic Objective SO-1** through catalyzing inter-sectoral partnerships among institutions in all four countries to overcome barriers to SLM, including building institutional and human capacity for land use/ resources planning and incentive/support mechanisms to promote wider SLM adoption. This is expected to lead to a harmonized policy and legal framework guiding communities and districts in SLM in the 4 countries; and capacities for the development, implementation and monitoring of intersectoral community action plans on SLM (21 district offices; 136 communities), operating inter-alia through improved government-NGO-private sector collaboration. In Uganda in particular the project will be linked with the process for developing the country Strategic Investment Framework. The project results will be fed into the TerrAfrica Knowledge Management process.

2. THE BASELINE

2.1 Current Situation

Reviews conducted during PDF-B show that a variety of environmental, agricultural and social development activities have been, or are being undertaken in parts of the Kagera River Basin. However, the resources mobilized for concrete actions on the ground are still limited in time and space, implementation approaches continue to be piecemeal - they do not adequately address the root causes, nor the need for common solutions. Support available through governmental institutions tends to be sectoral, addressing crop or livestock production, environmental protection or social issues, but without the capacity to address wider implications of overexploitation of land resources and ecosystems. Further, the sectoral approaches of many projects tackle technical and economic causes of degradation, while allowing underlying institutional and policy failures to persist, thereby maintaining processes of degradation. Notable recent and on-going projects have not adopted participatory approaches, or they have involved promotion of exotic, often inappropriate animal breeds / plant species without due consideration of locally adapted biological resources. Past projects have also had limited efficacy, having been largely within-country, with gaps and constraints in solving complex, inter-related, basin-wide environment and development problems.

2.2 Relevant On-Going Development Activities

At regional level Kagera TAMP activities to promote sustainable land and agro-ecosystem management (SLaM) are consistent with **NEPAD's Environment Programme and Action**

Plan and with long term objectives and priorities of its **Comprehensive Africa Agriculture Development Programme (CAADP)**. In this regard, the **TerrAfrica Partnership** and its SLM Knowledge Management (KM) process are expected to facilitate collaboration and enhance sharing of data, lessons learned and successful processes between the Kagera basin countries and other SSA countries. Kagera TAMP will become an integral part of the Country Strategic Investment Frameworks (CSIF), policy dialogue and partnership process for mainstreaming and scaling up of SLM in Tanzania and in Uganda. This will include collaboration by Kagera TAMP Technical/Steering Committees with TerrAfrica/SIP country teams and stakeholder mechanisms (capacity building, partnerships and leveraging investment and knowledge management and sharing of experiences with SLM project in Kilimanjaro Region, Tanzania, and Mainstreaming SLM for recovery of the Uganda Cattle Corridor.

The following projects complement the proposed Kagera TAMP activities and contribute to the baseline:

2.2.1 GEF supported projects

- **The Nile Transboundary Environmental Action Project (NTEAP)** (GEF World Bank and UNDP, 2004-2009, US\$39 million, regional unit hosted by Khartoum) was developed under the multi-donor **Shared Vision Programme (SVP) of the NBI** (launched in 1999 among members- Rwanda, Tanzania, Uganda, Burundi, Congo, D.R., Kenya, Sudan and Egypt). NTEAP promotes cooperation among the Nile Basin countries in protecting and managing the environment and the Nile River Basin ecosystem. Skills development training is provided to government ministries, NGOs and local communities in environmental management and monitoring (knowledge management, capacity building for EIA; prevention of transboundary erosion and pollution, including agriculture non-point source pollution; water quality monitoring; conserving wetlands and their biodiversity). Local NGOs and communities can receive small grants (US\$10,000-25,000) to promote community-based approaches to land and water conservation to reduce soil erosion, desertification, pollution and control invasive water weeds. Trained persons and small grants could be linked to Kagera TAMP activities in target communities. In turn, guidance, know-how and capacities for sustainable land and agro-ecosystem management by Kagera TAMP should feed into skills development processes established by NTEAP in the region. It includes components on
 - Confidence Building and Stakeholder Involvement
 - Applied Training- capacity building
 - Socioeconomic Development and Benefit sharing
 - Regional Power Trade
 - Water resources planning and management
 - Efficient water use for agriculture
- **The NTEAP Water use for agriculture project** (3-years, 2008 US\$5.46 million) includes the four Kagera countries, Congo DR and Kenya – the host. It aims to provide a sound conceptual and practical basis to increase water availability and efficient water use for agricultural production including an enabling environment and demonstration of water harvesting (sharing experiences of best indigenous and modern practices), community-managed and public/private managed irrigation (including possible reforms and improved systems performance). It will build networks of professionals from institutions and research organizations, farmers' and other water users, community and women's groups, and local NGOs who can work together to explore practical options. To better reflect a required transboundary nature, it is suggested to support a country specific crop focus and inter-country trading of products. This project is complementary to Kagera TAMP and collaboration will be established to seek co-funding for certain activities in target land units.

- **Lake Victoria Environmental Management Program (LVEMP-II): Phase I** of this program (1997-2005, GEF-US\$37M, IDA-US\$48M; Kenya, Tanzania and Uganda-US\$10M) focused on scientific research and data collection, monitoring and analysis for formulating policies/strategies for sound management of the Lake Victoria ecosystem and harmonizing and strengthening support services (fisheries, water hyacinth control, water monitoring, waste and wetlands management, catchment afforestation, support to universities and land use management). An independent evaluation recommended for phase II, integration and sustained use of the databases, continued focused research and capacity building, investment for remedial measures (pollution) and private-public partnerships, a focus on livelihoods and participatory approaches and dissemination of best practices. Following a bridging phase (2006-2008) supported by EU, Japan, SIDA and GEF which allowed some continuity, **LVEMP-II** (15 years) is expected to shift gear from improving the knowledge base, to achieving environmentally and socially sustainable development in the lake basin. The objective of the GEF support and co-financing by IDA, SIDA and the beneficiary countries is to improve collaborative management of the transboundary natural resources of Lake Victoria Basin (LVB) for the shared benefits of the EAC Partner States; and (ii) reduce environmental stress in targeted pollution hotspots and selected degraded sub-catchments to improve the livelihoods of communities, who depend on the natural resources of the LVB. This includes a) harmonized policy and regulatory frameworks for the management of water and fisheries resources and environmental health and natural resources data and information systems available to the public and used for policy decisions and planning, b) reduced point source and industrial pollution through waste water treatment and cleaner production technologies and c) increased awareness on the sustainable management of the Lake Victoria ecosystem, including adoption and monitoring of sustainable land management practices (range, afforestation and wetlands) by participating communities in a few targeted sub-catchments, as well as increased accountability and management. While only one watershed is selected per country, close collaboration and coordination will be established between Kagera TAMP and LVEMP-I in particular the watershed management component and development of data and information systems to ensure complementarity. LVEMP is clearly complementary to Kagera TAMP which will promote sustainable and viable agro-ecosystems, of particular relevance are LVEMP's activities on: water quality and water hyacinth control, wetland management, soil and water conservation, catchment afforestation and investment in capacity building and micro-projects. Kagera TAMP management will coordinate closely with LVEMP (and with EAC and LVBC) to ensure information sharing among water, land and agriculture sectors and complementary strategies and actions. This will include linkages between the two regional PSCs and institutional focal points and technical and financial collaboration for joint actions to ensure enhanced synergy and investment in integrated land and water management processes.
- **Integrated Management of Critical Ecosystems (IMCE)** project in Rwanda (GEF/WB, full project February 2006, US\$4.3mn of which US\$ 400,000 counterpart funding) is focusing initially on assisting the Government in the sustainable management of critical marshlands and later community management of watersheds and buffer zones to reduce pressure on protected areas. This is a clear complement to Kagera TAMP which focuses on agricultural ecosystems and both projects rely on close collaboration between agriculture and environment sectors. Although the geographical coverage differs, linkages can be made for sharing experiences and methods and capacity building.
- **Rehabilitation and sustainable land management project (PRASAB)** in Burundi (GEF/WB, 2004-2010, US\$40.47 million of which IDA-US\$35M, GEF-US\$5M, beneficiaries, 0.4M). The project covers all 5 agro-ecological zones and 9 provinces, including the 3 covered by Kagera TAMP (Kirundo, Muramvya and Mwaro), aiming at

restoration of certain degraded lands, development of community and national strategies for sustainable use of natural resources in certain wetlands and swamp areas, promoting an integrated approach of watersheds and wetlands management, as well as emergency support for returnees and internally displaced persons. Collaborative arrangements and close liaison by Kagera TAMP with PRASABs Inter-provincial management units (IPCMUs) will be established to ensure the projects are mutually supporting and avoid duplication by covering different communes and complementary issues. Kagera TAMPs added value will be the transboundary collaboration mechanisms, integrated agro-ecosystem (intersectoral) approaches, conflict resolution and legal awareness/arrangements for improved tenure, land rights and planning at community level, as well as scaling up improved land and agro-ecosystem planning and management for impact across the Kagera basin in collaboration with other basin countries,

- **Land Use Change Analysis as an Approach to Assessing Biodiversity Loss and Land Degradation (LUCID)** was a UNEP/GEF funded targeted research project that generated GIS models and maps of land-use change in some of the concerned districts in Uganda and Tanzania. Kagera TAMP has used some of this information during project formulation and will further develop existing databases/GIS systems for land-use change analysis during implementation.
- Links could also be made with the GEF/World Bank project on **Novel forms of livestock and wildlife integration adjacent or protected areas in Africa-Tanzania** (US\$4,5million IBRD grant, started end September 2005, supported by FAO/LEAD and ILRI). Although not in the Kagera basin⁵, experience sharing is envisaged on participatory land use planning and wildlife management areas; benefit sharing mechanisms and increasing returns from integrated wildlife and livestock production systems; and decision support tools to strengthen rational resources access and management. This project will contribute to the state of knowledge on wildlife corridors, traditional grazing systems and grazing hotspots, using existing databases on livestock (ILRI, FAO) and wildlife in Tanzania and recent studies on human welfare (by June 2007).

2.2.2 FAO supported projects

Relevant experiences, tools and methods as well as human capacities/expertise are also available through a number of FAO technical assistance projects, which also contribute to co-funding:

- **Information Products for Nile Basin Water Resources Management** (FAO/Italy trust fund project US\$5 million, 2005-2008, with the 10 Nile riparian countries) has been strengthening the common knowledge base in order to facilitate sustainable and equitable development of the shared Nile resource, and the capacity of the governments to manage scarce water resources and to deal with competing water demands from different societal sectors. Kagera TAMP will further this information sharing process and promote harmonised land and water policies and will, in turn, benefit from capacities in database management on water resources.
- **The FAO Africover Project** has completed mapping of land cover in Tanzania, Uganda, Rwanda and Burundi from medium resolution satellite imagery, and additional layers (e.g. roads, rivers and water bodies). These maps provide an invaluable resource to

⁵ Analyses of land use change dynamics at district level and land use option impacts on wildlife, natural habitats and human welfare in 6 villages in Samanjiro and Monsuli districts (Tarangire and Manyara national parks, Marang and Esimingo forest reserves, a highland forest in Ngorongoro Conservation area).

Kagera TAMP. However, the mapping has been conducted at different scales and imagery dates differ between the countries: Tanzania at 1:200,000 (1997), while Uganda (2001), Rwanda (1999) and Burundi (1999) are mapped at 1:100,000). Collaboration with Kagera TAMP could include re-mapping the basin to provide a time-series analysis of patterns of changes across the basin from dates of the original Africover.

- The regional project on **Improvement of Food Security in Cross-border Districts of Burundi, Rwanda and Uganda**, is supporting the modernization of agriculture and poverty reduction under the NEPAD framework. It could help Kagera TAMP target communities, for example, in developing viable opportunities for sustainable use of agrobiodiversity, improved processing and marketing of local products from domesticated and wild resources and use of local varieties and breeds.
- **Conservation agriculture for sustainable agriculture and rural development (CA-SARD, Phase II)** in Tanzania and Kenya builds on Phase I and other activities for piloting soil productivity improvement and Conservation agriculture (CA) practices in Eastern Africa, including Bukoba district during 2004-2006. CA is identified as one of the key technical options in the basin for reversing land degradation, reducing labour and improving livelihoods. However, its scaling up would depend on specific government and donor support for making available CA tools and equipment and strengthening expertise, through existing mainstream national agriculture programmes.

There are also other FAO technical assistance projects and partnerships that could contribute expertise and support for linking sustainable land management with food security, strengthened agricultural services and enterprise development, Farmer Field School approaches for integrated pest and production management, promoting payments for environmental services, and so forth, see Annex 12.

2.2.3 Other donor and government supported programmes

At regional level:

- The **Transboundary Integrated Water Resources Management Project of the Kagera River Basin (TIWRM)** of NELSAP (funded by SIDA and Norway US\$4.7 million, and EU 3.0 million; hosted by Kigali; 2006-2009) which also covers the entire Kagera basin, is of great relevance as a twin project to, and co-financer for Kagera TAMP. It focuses on tools and institutional development for a joint investment strategy among the basin countries, for optimal use of scarce water resources through pre-feasibility studies; capacity building (national and basin staff) for sustainable management and development of the river basin water resources; community awareness raising on environmental management issues and development options; basin-wide hydro-meteorological network, water quality survey and implementation of investment projects e.g. Rusoma Falls HEP. Of particular relevance to Kagera TAMP is the long term investment project for afforestation in the Kagera Basin and a number of smallscale projects: water supply/harvesting systems for people and livestock (1/country); cross-border biodiversity (through catchment afforestation); wetlands restoration; environmental management and awareness raising in Lake Cohoha ecosystems and Akanyaru Basin. This project which focuses on water resources has complementary goals to Kagera TAMP, but as confirmed by the coordinators of NELSAP and this project, sustainable land management through Kagera TAMP will be essential for its sustainability. Collaboration has been ensured during the formulation of both projects to optimise synergy and cooperation; during implementation joint planning and close collaboration among project teams, activities and sites will ensure an effective partnership. Links between the two Project Steering Committees will ensure dialogue and integration among water, agriculture and environment sectors in developing cooperative mechanisms for transboundary basin management.

At national level

In the four countries, though less in Burundi, due to the security situation in the recent past, there are many agricultural, environmental and community development programmes and projects that provide important baseline support at national and district levels for infrastructure, crop, livestock and forestry extension, research and marketing, as well as sustainable natural resources management. Kagera TAMP will be closely integrated with the mainstream agriculture investment and development programmes that focus on productivity, profitability, increased rural incomes; food security and reduction of rural poverty. Areas of collaboration at district/community level will include support to extension, technology transfer (integrated pest management, soil erosion control, water management, etc), promotion of off farm livelihoods, marketing, scaling up/out of successes.

- In Rwanda, the **Rural Sector Support Programme (RSSP)** (World Bank, 2001-2011) is the main agricultural investment nationwide and aims to increase food production and support off-farm income generation in rural areas in all provinces of Rwanda.
- In Burundi, the **Projet de Relance et de Développement du Monde Rural (PRDMR)** (FIDA-OPEP, 2000- 2008) promotes smallholder agriculture (extension, livestock, seed multiplication, inputs); land management (wetlands, watersheds, agro-silvo-pastoral integration); support to local initiatives (artisans, literacy, micro-finance, agro-processing); and community infrastructure (schools, health centres, water points, rural roads).
- In Tanzania, the **Agricultural Sector Development Programme (ASDP)** which comprises investment in the development of District Agricultural Development Plans; at national level to support development and management of policy interventions, in the institutional framework and national support services. In 25 districts in NW Tanzania including the Kagera region, support is also provided by **District Agriculture Sector Investment Project (DASIP)** (2006-2012, AfDB) which will support the preparation and

implementation of more effective Village Agriculture Development Plans (VADPs) through farmer capacity building; community planning and investment in agriculture and support to rural micro-finance and marketing.

- In Uganda, **Promoting the Modernisation of Agriculture (PMA)** aims at the eradication of poverty by means of a long term strategy for the transformation of the agricultural sector through multi-sector interventions and a decentralised planning process. It is supported by the **National Agricultural Advisory Services Programme (NAADS)** which aims to establish a demand-driven client- and farmer-led agricultural service delivery system, particularly targeting the poor and women. The focus is on a commodity driven approach for increasing productivity, empowering farmers and building their demand for both research and agricultural advisory services. During a recent evaluation, natural resources management was identified as an area requiring specific attention as the short term goals of farmers could lead to increased exploitation and degradation of resources without required investments in restoring natural resources.

In the environmental sector, besides the above mentioned GEF projects, in Rwanda support was provided until recently to the **Akagera Park and its Vicinity** (Rwanda Office of Tourism and National Parks-ORTPN and DED, phase II, which followed the GTZ supported “**Projet de Protection des Ressources Naturelles du Parc National de l’Akagera (PRORENA)**” (phase I completed early 2005) which aimed to strengthen the park through organisation and management after two thirds of the Akagera Park was de-gazetted in 1995 (park boundaries, community awareness of the value of the park, income generating activities targeted at park visitors and improved ecological balance of the park). This provides an important knowledge base for reducing pressures from agro-ecosystems and identifying needs for biodiversity conservation and long term protection of the park.

Kagera TAMP will complement these various projects and programmes by demonstrating the importance and ways and means to ensure a holistic agro-ecosystems approach that allows land users to match sustained productivity and improved livelihoods (food security, poverty reduction) with appropriate long term resource management strategies. More details of relevant programmes and projects are provided in Annex 12. Through the public involvement plan, Kagera TAMP will collaborate with the various projects, agencies and NGOs that provide support in the basin, many that are not mentioned here.

Lessons Learnt from Projects and River Basin Experiences

In preparing the project, linkages have been established with **relevant research and development networks** operating in the region such as ASARECA and its SWMNet, with a view to enhancing collaboration among actors and drawing on best available technical expertise, see Public Involvement Plan, Annex 5. The PDF-B team has taken note of experiences and lessons learnt by ongoing and recent programmes and projects and networks in the East Africa region, see case studies on the project website ([www.fao.org/ag/agl/field projects/](http://www.fao.org/ag/agl/field_projects/)) inter alia:

- in the Great Ruaha River Basin, Tanzania, Sustainable management of Usangu wetland and its catchment project (1998-2002) and subsequent Kimani (sub)catchment resource management programme;
- recommendations of the USAID supported assessment of successful community based natural resources management practices in Tanzania (2002);
- experiences of Uganda Land Management Programme (ULAMP) in Mbarara district;
- FAOs programmes and links with partners (ICRAF, RELMA, FARA, ASARECA, ACT, WOCAT etc.) to promote food security, improved land and water management, productivity and farmer empowerment in Eastern Africa, especially through Farmer Field School approaches;
- the NAADS programme in Uganda supporting privatisation of extension services;

- participatory land use planning for implementation of the Land and Village Land Acts, Tanzania;
- Consortium for improved land management in the Lake Victoria basin in Tanzania; INSPIRE and UGADEN networks in Uganda etc.
- IW LEARN.

These experiences have provided guidance for planning the Kagera TAMP interventions, including:

- Involving the full range of local community members (age, gender, landowners, landless, poor, better off), also local government, decentralized technical services, private sector in on-the-ground project activities;
- Ensuring participatory approaches with stakeholders in project design, implementation, monitoring and evaluation of activities and impacts, including selection of simple biophysical and socio-economic indicators with main stakeholder groups;
- Provision of incentives and removal of disincentives regarding the choice of land use/management practices, particularly land tenure issues and time-lags between investment and implementation;
- Building on local innovation in adapting new technologies to ensure they are culturally acceptable and viable under local conditions;
- Taking account in project activities of the impact of HIV/AIDS on communities' ability to adopt alternative strategies (particularly the impact on labour and household finances);
- Establishing effective mechanisms of collaboration, cooperation and coordination among stakeholders at local, national and regional levels.

Areas which are given particular attention in the Kagera-TAMP project framework include:

- Facilitating local community planning with local actors based on participatory diagnostic and mapping, use of large scale maps (e.g. 1:10,000 based on GPS and enlargements of available topographic maps/satellite imagery) for land use planning of target micro-catchments/land units and mobilizing district and additional resources for implementation of local community action plans;
- Capacity building and empowerment of local actors, through learning by doing and research-action approaches, with a focus on farmer field schools, strengthening of and improved access to support services, and building on local knowledge and innovations in the development of improved agriculture/natural resource management practices that have environmental and livelihood benefits.
- Developing a knowledge management system including i) data compilation, analysis and use based on monitoring of selected environmental and livelihood indicators with stakeholders from target sites and use of analytical tools such as WOCAT (World overview of conservation approaches and technologies) and LADA-Local; and ii) dissemination of findings and viable options for local, district and national institutions and partners through targeted products, manuals, guidance, case studies of byelaws and land tenure arrangements and other recommendations;
- Increasing impact by extending the application of locally adapted, proven management techniques/approaches through sharing results of pilot micro-catchments and interventions (exchange visits, field days, mass media, collaborative partnerships and training of trainers materials for out-scaling);
- Ensuring close co-ordination and collaboration among interventions in the basin; notably between Kagera TAMP and Kagera IWRM project which target the full Kagera basin (data, information, planning, decision making), other activities of NELSAP, LVEMP-II and co-financing partners;

- Harmonizing, adapting and simplifying relevant laws and regulations governing management and use of the river basin's natural resources, with an emphasis on local by-laws and land tenure arrangements negotiated among various local actors (herders, farmers, etc.) in community territories;
- Investigating mechanisms by which local land users can benefit from options for payments for environmental services (PES), particularly carbon offset credits as piloted by EcoTrust in Uganda [e.g. under the Clean Development Mechanism (CDM) of the Kyoto Protocol (Article 12), the World Bank Biocarbon Fund or bilateral payment programmes between US and Kagera countries for CDM type credit schemes or voluntary agreements for carbon emissions reductions (Plan Vivo system -ECCM)];
- Exploring options to address the impacts of HIV/AIDs on agriculture and food security, through interacting with primary and secondary schools, particularly using school gardens and FFFLS, whose main objective is “to empower children (*who have lost one or both parents to AIDS*) to handle their future, improve their livelihoods and become agents of their own change”;
- Establishing an efficient and transparent financing mechanism at project and district levels for natural resources and agro-ecosystems management actions, mobilizing co-funding from local, national, regional and international resources.

Annex 4 GLOBAL SIGNIFICANCE OF THE KAGERA RIVER BASIN Kagera Transboundary Agro-Ecosystems Management Project (TAMP)

The Natural Resources of the Kagera River Basin

The Kagera River Basin occupies an area of ca. 59,800 km², contributing to the capture and largest river inflow (24%⁶ equivalent to some 7.5 km³ of water per year) into Lake Victoria, the second largest freshwater lake in the world. The Kagera River (ca. 400 km long), the most remote headwater of the White Nile, is formed by two headstreams, which rise in the East Central African highlands (alt. ca. 2,500m) east of the watershed with the Congo basin. The Ruvubu rises just north of Lake Tanganyika in Burundi and the Nyabarongo rises in north-west Rwanda. These two main headstreams converge at Rusumo Falls, close to the Rwanda-Tanzania border, from where the Kagera flows north along the border and then abruptly east through the lowland floodplain in Tanzania and Uganda, before entering Lake Victoria (alt. 1145m) to the south of Sango Bay in Uganda. The Kagera River is estimated to contribute 10% of the outflow from Lake Victoria into the Nile, therefore is important in sustaining the flow of the Nile for the downstream countries (Sudan and Egypt).

The natural resources of the basin - soils, vegetation and landscapes - vary widely with rainfall and altitude giving four main agro-ecological zones. From the watershed with the Congo basin, there is a transition eastwards, including:

- a wet highland zone in Rwanda and Burundi (alt. 1900- 2500m, rainfall 1400-2000mm);
- a central, incised plateaux extending into Uganda (alt. 1500-1900m, rainfall 1000-1400mm);
- the lowlands and floodplains that comprise a drier central corridor (600-1000 mm) shared by Rwanda, Uganda and Tanzania;
- a narrow zone with increasing rainfall eastwards reaching a maximum of over 2000mm on the fringe of Lake Victoria.

The basin lies in the sub-humid agro-ecological zone with a bimodal rainfall, the long rains (*masika*) from late February to May/ June followed by short rains (*vuli*) from late September to early December, providing a growing period of between 90 and 365 days. The main soil types vary with the parent material: extensive schist, sandstone, quartzite or granite and gneissic formations; to intrusive basic rocks and volcanic materials in the highlands; to alluvial and colluvial soils in the marshes and wetlands. Many of the soils are highly weathered and leached resulting in poor inherent fertility.

The basin vegetation includes a complex of forest and woodland, savannah shrub and grasslands, wetlands and large areas used for agriculture by farmers and herders. The diverse ecosystems and the convergence of lowland (mainly western Guinea-Congolian) and highland (eastern afro-montane) species, provide a wide array of habitats for multiple plants, mammals, birds (see Table 1) and reptiles of high global significance. This includes remaining species of mega-fauna in protected areas (and habitats) such as the Akagera National Park, Lake Mburo and the Burigi Game Reserve, as well as the unique tropical biodiversity of the groundwater forests (Minziro, Munene and Rwasina Forest Reserves). It also includes the natural forests (such as Gishwati, Nyungwe and remnants of previously widespread riverine forest, with endemic plant and animal species (including species used in medicine and for wild food and local agroforestry species including *Ficus toningii*, *Markhamia luttea* and *Eritrina abissinic*). The extensive swampy forests and grasslands, with dense tall grasses and papyrus, are important ecological components of the floodplain ecosystem of the Kagera River, providing important water flow regulation and buffering functions.

⁶ Or 30% of the total Lake Victoria inflow if lake surface rainfall-evaporation is included.

The transboundary area of the Kagera Basin is among the most important areas in Africa in terms of agro-biodiversity and food production. The agricultural systems are characteristic of east and central Africa, notably the dryland agro-pastoral system, based on savannah grasslands rich in indigenous plant and animal species, and the intensive, diversified cereal- and banana-based cropping systems. However, the varying ecologies provide for a range of locally-adapted cropping, livestock and fishing activities and livelihood systems that are strongly influenced by water availability and quality.

This background explains why countries in the region and the world community are concerned with the sustainable conservation of the natural resources of the Kagera Basin.

Threats to Land Resources, Biodiversity and Ecosystem Function

The average annual population growth rates for the period 1999-2015 are estimated at 2.6, 3.1 and 3.9 and 2.9 percent respectively for Rwanda, Tanzania, Uganda and Burundi. The national population density figures for 2002 were Rwanda – 372, Burundi – 250, Uganda – 135, Tanzania – 61 per km². The river basin covers most of the surface area of Rwanda (80%) – one of the poorest and most densely populated countries in the world with over 500 inhabitants per km² in the cultivable lands. Over 90% of the populations of both Rwanda and Burundi are engaged in small-scale subsistence farming, with extremely small farms and fragmented plots. In Uganda and Tanzania, over 80% and 78% of the populations living in rural areas are engaged in small-scale subsistence agriculture. The 2006 total basin population is estimated to be 16.5 million – this is expected grow to 32.8 million by 2030.

The prime threats to the natural resources and agro-ecosystems of the Kagera basin are due to the various implications of the rapid increase in human population and to environmental change, including:

- overstocking and overgrazing of pastures and rangelands, also excess bush burning;
- continuous cropping, with reductions in fallow and rotations, reduced crop diversity in response to markets (food and forage species/ varieties), repetitive tillage, frequent burning, and soil nutrient mining (lack of nutrient restoration practices);
- encroachment of subsistence cropping into more fragile, drier areas, previously used/reserved for pasture and grazing, also into the wetlands;
- over-exploitation of forests and woodland and unsustainable harvesting (timber, fuelwood, charcoal, brick making, etc.) and;
- communal areas, such as forested highland and riverine areas, grazing lands, riverbanks and cultivated steep slopes, are often particularly affected by overexploitation and degradation.

These changing land use practices have been accompanied by neglect of the importance of agro-biodiversity and the ecological functions to which they contributes. The TDA and other PDF-B activities have highlighted critical losses of agro-biodiversity and associated function in the Kagera basin, specifically:

- f) **Reduced diversity of cropping systems:** Replacement of indigenous/local crop varieties by introduced commercial varieties (e.g. nematode and disease resistant varieties of banana, cassava, maize, beans). Loss or neglect of traditional varieties, including crop wild relatives and landraces, such as simsim, millet, sorghum (labour intensive, lack of research), sweet bananas (lack of market, disease), cowpea, sunflower, pigeon pea, Lima and Bambara beans (lack of seed/germplasm, research) cassava and yams (stolen), wild medicinal plants and local fruits and vegetables (e.g. *Solanum nigrum*, *Rhus* spp., *Physalis peruvian*, Cape gooseberry - fire, overgrazing and cultivation; Ginger lily - wetland destruction, *Lagenaria sicerat*, *Coleus plectranthus*, *Amaranthus viridis*, *Gynandropsis gynandra*). Decrease in diversity of indigenous tree associations in

banana/coffee farms e.g. *Ficus spp.*, *Borassus aethiopum*, *Maesopsis eminii*, and mango. Loss of other indigenous species found in cultivated areas (e.g. *Crotolaria jaburniflora*, *Leonites nepetaefolia*, *Acanthus pubescens*, *Thunbergia alata* and *Eluophia streptopetala* (internationally protected). Increasing problems of invasive crop weeds (e.g. parasitic *Striga* and Couch grass).

- g) **Changing composition of pastures and rangelands**, with associated loss of biodiversity and habitats, through excess fire and overgrazing with reduced abundance of palatable/nutritious grasses (such as *Braccharia spp.*, *Setaria spp.* and *Hyparrhenia spp.* and *Thephedes triandra*) and legumes (such as *Glycine spp.*, *Desmodium spp.*, *Siratro spp.* and *Centrocema spp.*) and increased colonisation by thicket with hardy grass species (such as *Imperata cylindrica*, *Cymbogon spp.* (lemon grass), *Sporobolus spp.* (cats tail) and *Panicum maximum*) and by woody shrubs (such as *Acacia hockii*, *Combretum spp.*, *Belanites spp.* and *Lantana camara*). In Rwanda *Lantana* has become a serious invasive species.
- h) **Replacement of the indigenous livestock breeds** especially the long-horned Ankole cattle (a cross between the indigenous long horned Sanga and the Zébu) by higher producing cross-bred cattle (such as the Pakistan *Sahiwal* Zebu, French Frisonne, Friesian Holstein, European Jersey, as well as trypanotolerant N'dama from West Africa and the *Sukuma* Zebu from Tanzania) and of local races of small ruminants and poultry by introduced races to improve productivity.
- i) **Reduced soil biota and biological functions** due to soil degradation and its effects on soil organisms, the soil food web, and its resilience and capacity to recover. It is increasingly recognized that important functions of biological tillage, nutrient cycling, carbon sequestration, infiltration and soil moisture retention are negatively affected through continuous disturbance by hoe and plough cultivation, reduced crop rotations, nutrient mining, loss of organic matter and protective vegetation cover (removal and burning). The effects on soil biodiversity have not been researched in depth in the basin and are not in general recognized by farmers, but studies with farmer field schools (FFS) in Bukoba District (TZ), have shown direct relations between soil biological activity and practices of tillage, organic matter and soil moisture management.
- j) **Homogenisation of habitats and risk of loss of crop- and livestock-associated diversity**, such as pollinators (reduced habitat; competition by introduced honey bee species), beneficial predators and biological control mechanisms provided by biodiverse systems. Agricultural encroachment into wetlands, riverine woods and riverbanks and reduced fallow lands reduces the habitat and hence populations of such beneficial species. Moreover, as shown by FFS study plots in the Kagera region in Tanzania reduced plant diversity, rotations and beneficial interactions (pest-predator, plant-soil nutrients, etc.) leads to reduced resistance to diseases and pests e.g. in bananas and maize. Communities have noted decreasing populations of pollinator species (small bees, butterflies, beetles) due to spraying pesticides to kill birds, flies and mosquitoes, forest clearing and loss of flower species, harvesting of honey using fire or toxic chemicals.

Many of the unique habitats and globally important species across the Kagera basin are threatened. Table 1 of this Annex shows the number of threatened species for the countries as a whole (data is not available for the Kagera basin).

Existing local knowledge does not encompass how to cope under such changed circumstances, nor in response to insidious, unprecedented environmental changes / variations due to climate change. [There are also profound changes occurring to the basin's climate, including increased variability (compared to previous patterns), particularly late onset and short duration rainy seasons.] Population pressures, insecurity and the struggle to meet short term needs have compromised the capacity of farming communities to sustain the land resources even though it is in their best interests.

Despite all the above, the Kagera river basin encompasses an immense productive potential for improving livelihoods and reducing poverty.

Causes of Degradation Processes

The causes of the ongoing processes of degradation appear to be numerous and interlinked (see Tables 2 and 3), inter alia:

The **physical and technical** causes are due to the lack of knowledge and uptake of both sound participatory models and agro-ecosystems approaches to the sustainable management and use of natural resources;

The **socio-economic** causes relate to the extreme levels of poverty (few tools, poor housing, small land areas and little disposable income) among the rural subsistence farmers of the Kagera basin. Population pressures, insecurity and the struggle to meet short term needs have compromised the capacity of farming communities to sustain the land resources, even though it is in their best interests.

The **institutional, regulatory and policy** causes relate to widespread institutional deficiencies and low human capacities, which have led to inadequate policies, laws and regulations, insufficient enforcement and poor extension services. Local government land resources planning capacity remains weak (few staff, limited training), sectoral, uncoordinated and ineffective in terms of bringing about a change from unsustainable to sustainable land use and resources management. There has been some development progress, for example in land registration, improved water supplies, environmental protection, crop and livestock production targets, local organisation and access to inputs and services. However, it has also led to confused messages - especially those reaching land users, lack of incentives, inefficiencies and a failure to adopt sustainable farming systems and management practices. The benefits of approaching the transboundary aspects of management of the natural resources and agro-ecosystems of the Kagera basin had, until commencement of work on the TAMP, remained beyond the perception of the four countries.

Table 2 presents the main environmental problems, their technical, socio-economic, institutional and socio-political causes and demonstrates the complexity of the issues facing the Kagera.

Annex 4: Table 1 - Analysis of Main Environmental Problems of the Kagera River Basin

Problems	Symptoms	Technical causes	Socio-economic causes	Institutional causes	Socio-political causes
Land degradation	Low above ground biomass	Extension of cultivation into unsuitable areas Little use of cover crops Repeated bush fires Overgrazing Climate change (late onset and short duration of rains)	High rates of population growth Increasing demand for fuelwood and charcoal Unsuitable agricultural and pastoral practices Increasing numbers of livestock Absence of off-farm opportunities	Traditional structures not adapting to new economic and demographic order Limited competences and traditional sectoral approaches of supporting institutions	Poor co-ordination and implementation of many and various land and agricultural policies
	Declining soil fertility	Reduction in traditional fertility management practises (fallows, rotations, OM cycling) Climate change (higher intensity rainfall leaching nutrients)	Unsustainable agricultural practices – nutrient mining High rates of population growth	Extension services unable to support land users to adapt to changes	Poorly understood and unsuitable agricultural and demographic policies
	Widespread soil erosion	Low plant cover Low soil organic matter (low aggregate stability) Erosion control structures not maintained Climate change (higher intensity rainfall)	Over cultivation Organic matter / manure unavailable Livestock trampling (particularly around watering areas inter alia valley dams, river banks)	Limited agricultural services	Land management policies not effectively implemented

Problems	Symptoms	Technical causes	Socio-economic causes	Institutional causes	Socio-political causes
Water degradation	Drying up of springs	Inadequate recharge – rapid run-off from degraded soils Climate change - reducing volume and duration of rainfall	Land pressure and cultivation of the fringes of wetlands	Lack of structures with experience in water resource management	Lack of appropriate means and a policy for coordinated management of shared waters
	Increased incidence of floods	Rapid run-off from degraded soils	Absence of flood control structures	Lack of structures with experience in water resource management	Lack of appropriate means and a policy for coordinated management of shared waters
	Sediment accumulation in wetlands, watercourses and lakes	Stream and river sediment loads are excessive Periodic very low periods along certain watercourses	Extending crop lands on riverbanks and steep slopes Over-cultivation of croplands Overgrazing of pastures	Poor, sectorally-based support services	Inter-sectoral approaches not adopted by local service providers
	Reduced groundwater storage capacities	Climate change - inadequate recharges (low rainfall) Excessive harvests	Increase in human and livestock population	Lack of efficient structures and mechanisms	Inappropriate water management policy
	Physical, chemical and biological modification to waters	Water pollution: (i) household refuse (ii) industrial waste (iii) chemical and toxic products; and (iv) sludge from industrial mines	Difficulties in investing in environmental waste disposal	Decontamination services not operating	Policies on hygiene and those relating to the environment are not internalized.
Degradation of biological resources	Reduction in presence or disappearance of indigenous wild and crop species (including trees, perennials, annuals, medicinal plants)	Excessive deforestation Concentration on small number of crop species Overgrazing	Land pressure Unsuitable agro-pastoral practices Excess harvest of forest products	Inadequacy of agricultural and forestry services	Environmental laws, policies and by-laws not enforced

Problems	Symptoms	Technical causes	Socio-economic causes	Institutional causes	Socio-political causes
	Destruction of areas of habitats which protect local biodiversity areas	Deforestation Conversion of pasture to small-holder cropping Creation of islands of e.g. gallery forest in a “sea” of agricultural land – loss of connectivity of habitats	Land pressure Unsuitable agro-pastoral practices Excessive harvest of forest products	Inadequacy of agricultural and forestry services	Environmental laws, policies and by-laws not enforced
	Reduction in populations / disappearance of animal (wild and domesticated), fish, bird and reptile species	Destruction of habitats and reduction of food resources Promotion of exotic breeds Poaching Unsuitable fishing techniques and equipment	Land pressure Population pressure Demand for increased yields of milk and meat Growing demand for game, trophies, live animals Excessive hunting and fishing	Ineffectiveness of wildlife, agricultural and environmental management structures – lack of appreciation of benefits of intersectoral approaches Potential of local races not recognised / promoted by agricultural services	Laws, policies and by-laws not well understood by land users Laws, policies and by-laws not effectively implemented
	Modification of the aquatic ecosystem	Modification of water regime Climate change Pollution (agricultural and industrial) of hydrological system	Excessive water harvesting Non-observance of waste regulations in urban, industrial and commercial cropping areas	Poor water management services Limited waste disposal services	Management and improvement policies are not assimilated
	Appearance of new plant species	Introductions	Lack of awareness of the potentially damaging implications of exotic species in river systems		

Annex 4: Table 2 - Analysis of Root Causes, Constraints & Baseline Activities in the Kagera Basin

Major impacts of degradation of natural resources	Intermediate and root causes	Barriers to sustainable land management	Baseline scenario activities
Reduction of plant cover	<p>Human and livestock population pressure on land – decreasing holding size, fragmentation, farm land used for homesteads.</p> <p>Lack of land user/community awareness of methods to improve land management</p> <p>Accelerating deforestation due to growing demand for wood for energy and construction, also land for agriculture</p>	<p>Insufficient awareness and participation of local communities in development actions and natural resources management</p> <p>Lack of non-agricultural employment</p> <p>Land insecurity and landlessness</p>	<p>Technical measures for protecting natural resources are taken in certain areas (e.g. forest reserves and protected areas) but protection not effectively implemented</p> <p>Regulatory measures not widely implemented as negative (fines etc.)</p> <p>Very few agro-processing or non-agricultural alternatives are available in rural areas to reduce pressure on the lands</p>
Low soil fertility	<p>Rapid population growth causing enforced abandonment of traditional systems which maintained soil fertility (fallows, rotations, use of manure). Resulting in nutrient mining</p> <p>Cultivation of marginal lands (steep slopes, wetlands, driers pastoral lands), repeated bushfires, overgrazing</p>	<p>Existing traditional or modern systems of land conservation ineffective</p> <p>Ignorance and lack of application to methods and practices favourable to sustainable agriculture</p> <p>Lack of means dedicated to soil conservation and restoration of degraded lands</p>	<p>The agricultural, pastoral and forest extension services poorly resourced, sectoral.</p>
Lowering of the groundwater table and changes to hydrological regimes in watercourses	<p>Exposure of bare ground across the watershed, resulting in formation of hard pans, reduced infiltration and groundwater replenishment</p> <p>Excessive harvesting of surface aquifers</p> <p>Climate change – shortening rainy seasons (resulting in previously perennial streams becoming seasonal) and more frequent high intensity rainfall leading to ‘flash floods’</p>	<p>Uncontrolled use of unsuitable soil and water conservation measures</p> <p>Lack of an integrated water management policy.</p>	<p>Ineffective management and protection of upper catchments</p> <p>Proposals to install harmonized systems of data processing, monitoring-evaluation and information dissemination exist but have not been made operational</p> <p>(this aspect is addressed by NELSAP – IWRM project and LVEMP)</p>
Disappearance of some plant, animal and others species	<p>Destruction of habitats</p> <p>Poaching and Commercial pressures</p> <p>Promotion of exotics</p>	<p>Land pressure</p> <p>Non-observance of environmental protection measures</p>	<p>Limited local awareness / available information on the importance and value of biodiversity (especially agro-biodiversity)</p>

Table 3 summarises the causal relationships between the immediate and root causes of land degradation in the Kagera basin. The table assists in understanding the complexity and interdependence of the causes and barriers to sustainable land management. The analysis highlights that past and indeed many current activities in the Kagera basin have had only limited impact on land degradation and that there remains an urgent need to intervene to use the engine of agriculture to escape from the vicious cycle of land degradation into the virtuous cycle of sustainable agro-ecosystem management including the activities proposed in TAMP to address the key transboundary issues agreed in the Entebbe PDF-B workshop (Table 4)

Annex 4: Table 3 - Kagera TAMP Actions to Address Identified Priority Transboundary Issues with Global Significance

Transboundary Issue	TAMP Actions
Harmonise laws and regulations	At national level and across the basin, to address the interlinked issues of agriculture, land degradation, biodiversity conservation, carbon sequestration, protection of international waters and sustainable livelihoods and food security.
Promote application of policy/laws	Through local consultation, experience sharing and capacity building for community-driven conflict resolution/management solutions between user groups (herders, farmers, foresters, park wardens). Lessons of GEF Cross-borders project; LVEMP, NELSAP, ASARECA, etc.)
Optimize communications/exchange of information	Among countries and sectors (food security, agriculture, environment) for effective collaboration, coordination and early warning across river basin (joint GIS/RS systems/databases, planning, training, electronic conferencing for committee meetings, stakeholder consultation).
Control and management of Bush fires	Community awareness of negative effects of repetitive burning and potential value/alternative uses of biomass (grasses, crop residues, etc) such as CA/zero grazing, and methods for managing vermin. Laws and by-laws.
Control of Livestock movements, trade and disease transmission	Links and guidance from existing transboundary programmes (PACE; tsetse control, AU-IBAR) to strengthen actions. Assess impact of land use change - loss of pastures, conversion of cattle corridors to ranches, commercial farms and their implications/ impacts on access to grazing/ water in dry season/drought periods.
Control of soil erosion, sedimentation and impacts on rivers, wetlands and flood risk	Improve land management practices (cropping, livestock, forestry) through integrated approaches and local adaptation of conservation agriculture, agroforestry, zero grazing, fodder and rangeland management. Community monitoring/assessment of impacts on runoff, soil erosion, sedimentation, siltation of wetlands, rivers and inland waters, improved productivity and ecosystem function (hydrological regime, nutrient cycling, carbon emissions etc.)
Water resources management (quality and quantity)	Guidance and capacity building on integrated approaches for land, water and biological resources planning and management to reduce soil erosion, sedimentation, pollution (e.g. horticulture; paddy) and improve HEP generation. Coordinated, complementary actions with LVEMP and NELSAPs projects (water allocations, information, resource management, water use efficiency).
Control of Health issues related to water quality	Address human health and well-being issues as part of integrated resources management. Assess effects of land use and wetland protection /management on water quality (e.g. suspended solids that exacerbate bacteria/water-borne diseases (dysentery, typhoid, cholera, bilharzia, malaria).
Control of sources and spread of Water hyacinth	Through expansion of actions of NELSAP and LVEMP to upstream branches of the Kagera (from Lake Victoria) Assess effects in reducing effects: asphyxiation, effects on aquatic life, fish stocks, water quality.
River bank and lakeshore protection and management	Assess situation and develop community driven, coordinated solutions across borders for protection and management, conflict resolution and local regulations.
Wildlife management and control	Assess effects of movement, hunting, harvesting of wildlife species (animal + plant). Develop plans/options to enhance wildlife conservation and community

Transboundary Issue	TAMP Actions
	benefit sharing arrangements across borders (e.g. Akagera national park).
Impact of refugees on land resources and community based management	Assess and identify options to reduce effects/threats to security of refugee movements on sustainability and investment in land resources management, (e.g. Burigi-Akagera boundary areas and Lake Mburo National park).
Charcoal making and sale	Assess extent and implications of cross border wood harvesting and burning for charcoal and propose solutions through community plans and consultation.
Control of Crop pests and diseases movements and outbreaks	Identify and exchange bio-control practices and disease resistant germplasm and promote participatory breeding/propagation approaches among communities in the basin.

Annex 10 LEGAL CONTEXT

Privileges and Immunities

Nothing in this Agreement or in any document relating thereto, shall be construed as constituting a waiver of privileges or immunities of FAO, nor as conferring any privileges or immunities of FAO on any other institution or its personnel.

Settlement of Disputes

The present Agreement shall be governed by general principles of law, to the exclusion of any single national system of law. Any dispute, controversy or claim arising out of or in connection with this Agreement or any breach thereof, shall, unless it is settled by direct negotiation, be settled by arbitration in accordance with the UNCITRAL Arbitration Rules in force on the date when this Agreement takes effect. The parties hereto agree to be bound by any arbitration award rendered in accordance with this Section as the final adjudication of any dispute.

Intellectual Property

All intellectual property rights in the work to be performed under this Agreement shall be vested in FAO, including without limitations, the right to use, publish, translate, sell or distribute, privately or publicly, any item or part of thereof.

Government Obligations

1. The achievement of the objectives set by the project shall be the joint responsibility of each signatory Government and FAO.
2. As part of its contribution to the project, each Government shall agree to make available the requisite number of qualified national personnel and the buildings, training facilities, equipment, transport and other local services necessary for the implementation of the project.
3. Each Government shall assign authority for the project within the country to a Government agency, which shall constitute the focal point for cooperation with FAO in the execution of the project, and which shall exercise that Government's responsibility in this regard.
4. Project equipment, materials and supplies provided out of the project funds shall remain the property of FAO, which shall ensure that such equipment, materials and supplies are at all times available for use of the project and that adequate provision is made for their safe custody, maintenance and insurance until specifically transferred to an appropriate collaborating institution. Vehicles, personal computers, and all other items of non-expendable equipment remain the property of FAO until GEF authorizes their transfer to an appropriate collaborating institution.

5. Subject to any security provisions in force, each Government shall furnish to FAO and to its personnel on the project, if any, such relevant reports, tapes, records and other data as may be required for the execution of the project.
6. The selection of FAO project personnel, of other persons performing services on behalf of FAO in connection with the project, and of trainees, shall be undertaken by FAO, after consultation with each Government. In the interest of rapid project implementation, each Government shall undertake to expedite to the maximum degree possible its procedures for the clearance of FAO personnel and other persons performing services on behalf of FAO and to dispense with, wherever possible, clearance for short-term FAO personnel.
7. Each Government shall apply to FAO, its property, funds and assets, and to its staff, the provisions of the Convention on the Privileges and Immunities of the Specialized Agencies. Except as otherwise agreed by any signatory Government and FAO, each Government shall grant the same privileges and immunities contained in the Convention to all other persons performing services on behalf of FAO in connection with the execution of the project.
8. With a view to the rapid and efficient execution of the project, each Government shall grant to FAO, its staff, and to all other persons performing services on behalf of FAO, the necessary facilities including:
 - i) the prompt issuance, free of charge, of any visas or permits required;
 - ii) any permits necessary for the importation and, where appropriate, the subsequent exportation, of equipment, materials and supplies required for use in connection with the project and exemption from the payment of all customs duties or other levies or charges relating to such importation or exportation;
 - iii) exemption from the payment of any sales or other tax on local purchases of equipment, materials and supplies for use in connection with the project;
 - iv) payment of transport costs within the country, including handling, storage, insurance and all other related costs, with respect to equipment, materials or supplies for use in connection with the project;
 - v) the most favourable legal rate of exchange;
 - vi) assistance to FAO staff, to the extent possible, in obtaining suitable accommodation;
 - vii) any permits necessary for the importation of property belonging to and intended for the personal use of FAO staff or of other persons performing services on behalf of FAO, and for the subsequent exportation of such property;
 - viii) prompt customs clearance of the equipment, materials, supplies and property referred to in subparagraphs (ii) and (vii) above.
9. Each Government shall deal with any claim which may be brought by third parties against FAO or its staff, or against any person performing services on behalf of FAO, and shall hold them harmless in respect of any claim or liability arising in connection with the project, unless the concerned Government and FAO should agree that the claim or liability arises from gross negligence or wilful misconduct on the part of the individuals mentioned above.
10. The persons performing services on behalf of FAO, referred to in paragraphs 6 to 9, shall include any organization, firm or other entity, which FAO may designate to take part in the execution of the project.
11. The present agreement shall be governed by general principles of law, to the exclusion of any single national system of law.

Project Revisions

The implementing/executing agency is authorized to effect in writing the following types of revisions to the project document, provided it has verified the agreement thereto by GEF in writing:

The following types of revisions may be made to this project document with the approval of the FAO GEF Unit:

- Revision of, or addition to, any of the annexes to the Project Document;
- Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation;
- Mandatory annual revisions which re-phase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility; and
- Inclusion of additional annexes and attachments only as set out here in this Project Document (with the exception of the Legal Context).

All minor revisions shall be reported in the annual Project Implementation Review (PIR) report that will be submitted by FAO to the GEF Evaluation Office.

Proposed major changes can be effected only with the prior agreement in writing of the FAO GEF Unit and the GEF Secretariat. Major changes are defined as those that include project restructuring that involves a major change in project scope or design, a change in the project's objectives, re-allocation of GEF grant affecting the project's scope or objectives, or any other change that substantially alters the project concept.

**Annexe 11 - DETAILS ON GOVERNMENT RESPONSIBILITIES, NATIONAL POLICIES
AND RELEVANT DEVELOPMENT PROJECTS**

1. Institutional responsibilities

Institutional responsibilities in the area of environmental and natural resources management and agricultural development are shared by a number of ministries and bodies in the four countries. Table 1 indicates the concerned national bodies in each country with mandates in: environment, land, agriculture, livestock, forestry, water resources, protected areas, wetlands.

ANNEX 11: TABLE 1 - Responsibilities of the Main Government Institutions Concerned

Rwanda Bodies/Institutions	Responsibility
Ministry of Land, Environment, Forestry, Water and Mines (MINITERE)	Environment in general, biodiversity, land, land use and land tenure, water, forests and mining
Ministry of Agriculture and Animals Resources (MINAGRI)	Agriculture, livestock and pastures, soil and water conservation and wetlands management.
Ministry of Infrastructures (MININFRA)	Primary role for energy, roads and other heavy infrastructures
Office for Tourism and the Protected Areas (ORTPN) in the Ministry of Commerce, Industry and Tourism (MINICOM)	protected areas management and wildlife including the Akagera National Park
Institut pour les Sciences Agronomiques du Rwanda (ISAR)	Research in best practices
Ministry of Local Government (MINALOC)	Decentralized planning and decision making
Tanzania Bodies/Institutions	Responsibility
Division of the Environment (DOE) in the Vice President's Office	Advises on environmental policy formulation, legislation, sensitisation and monitoring and coordinates poverty alleviation and of NGOs and community-based organizations (CBOs)
Ministry of Agriculture, Food Security and Co-operatives (MoAFC)	Promotes efficient and effective services to the agricultural sector in collaboration with all stakeholders through: formulating coordinating, monitoring and evaluating implementation of relevant policies and monitoring crop regulating institutions; providing technical services in extension, irrigation, plant protection, land use, mechanization and information services; promoting and coordinating research and development and investment in the sector; promoting private sector and local government participation in delivery of support services; undertaking crop monitoring and early warning, maintaining strategic food reserves, promoting appropriate post harvest technologies; collaborating with national and international institutions in the agricultural sector. Facilitate development and

	implementation of co-operatives, developing primary societies and co-operatives and formation of co-operative savings and credit societies.
Ministry of Livestock Development (MoLD)	Promotes and develops policy for the development of well managed livestock resources for social and economic development; supervises, livestock research, extension and veterinary services.
Ministry of Water (MoW)	Coordinates water resources development, rural and urban water supplies, water quality and pollution control, water management and infrastructure, river basin development.
Ministry of Marketing and Cooperatives (MMC)	Facilitation for development and implementation of co-operative and marketing policies; developing primary societies and cooperatives; formation of cooperative savings and credit societies; conducting intra and intra-regional trade market research and surveys; ensuring development of human resources; management of projects.
Ministry of Lands and Human Settlements (MLHS)	Coordinates land policy, surveying, valuation and development services, human settlements development, land registration and regional physical planning. National Land Use Planning Commission (NLUPC) is responsible for implementing the 1999 Land Act + Village Land Act
President's Office – Regional Administration and Local Government (PO-RALG)	Co-ordinates and supervises regional development and administration. The Ministry co-ordinates rural and urban development management policy and strategies, co-ordinates Regional Secretariat activities and builds their capacity in institutional development strategies for integrated socio-economic development and financial development of Local Government Authorities. The Ministry also co-ordinates and supervises development planning and sectoral interventions on donor-supported programmes at district and other local levels; issues Ministerial guidelines to Regional Secretariats and Local Government Authorities; strengthens the channel of communication and information flow between national and sub-national levels.
Uganda Bodies/Institutions	Responsibility
National Environment Management Agency (NEMA) of the Ministry of Water, Lands and Environment	Supervising, co-ordinating, planning and monitoring of environmental matters. Focal point for the CBD.
the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)	Coordinates agricultural policies, initiatives and projects; inspection, monitoring and evaluation of agricultural activities of local governments; provision of technical assistance, supervision and training to agricultural advisory service personnel.
Burundi Bodies/Institutions	Responsibility
Ministère du territoire, du tourisme et de l'environnement et du tourisme (MINATTE)	Design and implement national policies on environment and regional planning; set up procedures for EIA for projects; popularize national environmental education programme; inventory, study and settlement of new arable lands to implement national policy to combat erosion, in collaboration with MINAGRI; contribute to implementation of conventions/international programmes on protection/management of natural resources and environment; contribute to promotion of tourism, with other Ministries concerned;
Ministère de l'Agriculture et de l'élevage (MINAGRIE)	Agriculture, livestock production, food security, soil conservation and improvement, wetland management; extension, research in best practices, improved seeds etc.
Ministère des Travaux Publics et de l'Équipement (MTPE)	Construction and control of road infrastructure, extraction of clay for brick making, digging of arable lands and overexploitation of wood
Institut des Sciences Agronomiques du Burundi (ISABU)	Research of best practices
Office National du Tourisme (ONT)	Promotion of tourism
Institut national pour l'Environnement et la	Conservation and management of parks and natural reserves

conservation de la Nature (INECN)	
Institut Géographique du Burundi (IGEBU)	Meteorological stations, cartography, hydrology

2. National Policies and legislation

More detail is provided on the relevant national policies and legislation in Table 2 of this Annex.

ANNEX 11: TABLE 2 - SUMMARY OF RELEVANT NATIONAL POLICIES AND LEGISLATION

NATIONAL DEVELOPMENT STRATEGY	NATIONAL ENVIRONMENT STRATEGY	NATIONAL STRATEGY FOR AGRICULTURE AND LIVESTOCK
<p>RWANDA</p> <ul style="list-style-type: none"> • Resettlement & reintegration; • Rights of all refugees; • Development of human resources & national economy; • Institutional capacity building; <p>Environment is one of priorities identified by the Poverty Reduction Strategy (PRS), ****, and is among the fundamental programmes focusing on agricultural transformation and rural development.</p> <p>Vision 2020 environment pillar to reduce pressure on NR (land, water, biomass, biodiversity).</p>	<p>National Environment Policy,</p> <ul style="list-style-type: none"> • population, land use and NRM linkages, • reverse environmental pollution & degradation processes • better management/protection of NR & environment • preserve resources for future generations • mainstream gender in the protection of environment. <p>PRS - Rational use of wood and alternative sources of energy. PRS - Water supply, rainwater harvesting and use in towns and villages. Environment-friendly water use in socio-economic sectors. Wetland conservation & management Conservation and management of forests and protected areas; Conservation and sustainable use of biodiversity of natural & agro-ecosystems; equitable sharing of benefits derived from biological resources.Environment-friendly agro-pastoral & fishing</p>	<p>Agriculture strategy: Input & product markets; Improve SWC management; Develop swamp lands; Farming intensification: inputs & extension; Support farmers groups; Rural credit; Storage & Farm roads</p> <p>Livestock strategy: Increase rural incomes; Reduce imports of meat & milk; Restocking areas depleted in war; Reallocate communal pastoral lands to groups/ individuals; Watering points & forage production; Animal health & husbandry programs; Privatisation; Milk collection points; slaughter plants; Markets; Transport; Access to credit;</p> <p>PRS accompany agricultural/rural development by environment protection (SWC, reforestation, rational use of wetland, water).</p>
<p>TANZANIA</p> <p>National Strategy for Growth and Reduction of Poverty (NSGRP,1998) guiding framework for stakeholders; coordination of policies and strategies for the eradication of poverty caused by poor health services, illiteracy, malnutrition, environmental degradation and high mortality rate.</p> <p>Tanzania Development Vision 2025 envisages raising the standard of living to those of a typical medium income country (food security, increased income and export earnings)</p> <p>Rural Development Strategy (RDS) aims to eradicate poverty through multi-sector interventions (agriculture, roads, water, education, health, and local government reforms),decentralization and participatory approaches</p>	<p>National Environmental Policy (1997) and Laws (2005) an integrated framework for environment and NRM to promote socioeconomic development while maintaining environmental quality and resource productivity. Land degradation and drought are priority problems. Implemented through the National Environment Action Plan (1994), National Conservation Strategy for Sustainable Development (draft, 2000), Forestry Action Plan (1994) and the Action Plan arising from the Soil Fertility Initiative (SFI) in 2000.</p> <p>Water Resource Management Policy (1999) management and conservation of water quality, ecosystems and wetlands, public awareness; broad stakeholder participation in planning</p> <p>National Land Policy (1999) secure land tenure; optimal use of land resources; broad-based socio-economic development while protecting ecology/ environment.</p> <p>National Forest Policy (1998) inter alia to ensure ecosystem stability, water catchments and soil fertility.</p> <p>Wildlife Policy conservation of biological resources; include all stakeholders, sustainable use, fair & equitable sharing benefits.</p>	<p>Agriculture and Livestock Policy (1997)</p> <ul style="list-style-type: none"> • Improve well-being of those dependent on agriculture; • Integrated, sustainable use and management of NR (soil, water and vegetation); • New technologies to increase labour and land productivity <p>The Agricultural Sector Development Strategy (2001) sets clear targets for growth (5%/year) and poverty reduction objectives of the NSGRP and contributes to the Tanzania Development Vision (TDV, 2025). It focuses on strengthened public-private partnerships and implementing District Agricultural Development Plans (DADPs) supported by policy and institutional arrangements and crosscutting issues..</p> <p>MAFS aims to improve delivery of extension services by reducing extension staff-farmer ratio from 1: 1595 to 1:700 in 2010.</p>

ANNEX 11: TABLE 2 - SUMMARY OF RELEVANT NATIONAL POLICIES AND LEGISLATION

NATIONAL DEVELOPMENT STRATEGY	NATIONAL ENVIRONMENT STRATEGY	NATIONAL STRATEGY FOR AGRICULTURE AND LIVESTOCK
<p>UGANDA The Constitution of the Republic of Uganda, 1995 entrusts the state with responsibility to protect important natural resources (land, water, wetlands, minerals, oil, fauna, flora). Land belongs to the citizens and vested in them in accordance with the land tenure systems. Other resources are held in trust by government on behalf of the citizens.</p> <p>National Poverty and Environment Action Plan (PEAP) and District Development and Environment Action Planning (DEAP) strategies address the interlinkages between poverty and environment and links sectors.</p>	<p>National Environment Management Policy (1995) implemented through NEAP and N.E. Statute 2000 (umbrella framework): Conservation & restoration of ecosystems, biodiversity; ecological process. Public awareness; local participation in environment actions; Farming systems & land-use practices to conserve/enhance productivity. Sustainable management: of forest & wildlife resources and rangelands (within capacity); of fisheries and other aquatic resources; use of traditional/alternative energy sources.</p> <p>National Policy for the Conservation and Management of Wetland Resources (1995) to maintain ecological and socio-economic functions of wetlands for present and future generations; optimal use of resources, minimize unsustainable practices, partial exploitation for economic development. Wetlands, River Banks and Lake Shores Management, N.E. Regulations (2006) wise & sustainable use for catchment conservation and flood control.</p> <p>National Land-use Policy (draft) to achieve sustainable socio-economic development through optimal land use; addresses a gap in integrated, harmonized land-use planning/ management across sectors and among land users/ stakeholders.</p>	<p>Plan for Modernisation of Agriculture Policy to increase production/unit area through research, extension, farmer and market linkages; sustainable use/management of NR.</p> <p>Food and Nutrition Policy 2003 multi-sector, coordinated process - food security, improved nutrition increased income</p> <p>Livestock Policy optimum stocking rates to avoid/ prevent over-grazing and soil compaction; rangelands management.</p> <p>Cattle Grazing Act Cap 223 and Prohibition of Grass Burning Decree 5 (1974) control by sub-county chief /veterinary or agriculture officer.for specific purposes</p> <p>National Forestry Policy and National Forestry and Tree Planting Act (2003) encourage private & public investment in sustainable forest management (farm forestry, watershed protection, joint management of forest reserves.</p> <p>National Soils Policy (draft) to maintain productivity of land /agroecosystems through sound soil management and use; soil research/extension; awareness of impacts of soil erosion.</p> <p>Access to Genetic Resources & Benefit Sharing, NESI # 30 (2005) sharing of derived benefits; sustainable use of GR.</p>
<p>BURUNDI Cadre stratégique intérimaire de relance de la croissance économique et de lutte contre la pauvreté (2003): quality of social services (health; education); stable macro-economic framework; economic growth -poverty reduction; resettlement/integrate victims of conflict/ disadvantaged groups; fight against HIV/AIDS/STD; women in development; peace,security and good governance.</p> <p>Link NAP, energy and poverty reduction strategies (local/NGO participation in decision making/action plans).</p>	<p>National Environment Policy (1997) population, land use, NR linkages; reverse pollution & degradation processes; improve management/preserve resources for future generations; gender in environment protection, protected areas integrity/perennity.</p> <p>PRS Rational use of wood; alternative energy sources/HEP; water supply, rainwater harvesting and use in towns and villages.</p> <p>Conservation & sustainable use of wetlands, of forests/protected areas, of biodiversity (natural; agro-ecosystems); equitable sharing of benefits derived from GR; sustainable agro-pastoral & fishing</p> <p>National policy on water resources management (2001) access to drinking water; wastewater management; use of water for irrigation; rainwater conservation; wetland/hydroly management. Regional cooperation for management of shared water resources.</p> <p>NAP Land degradation (2003) land use plan ; watershed management (agro-sylvo-pastoral techniques), climate change mitigation; protect/conserv water resources; prevent natural disasters, regional plans; farm planning).</p>	<p>National food security policy (2003) increase/diversify food production; restore soil fertility, SWC, watershed management, tree planting, agroforestry; Participatory dialogue on arable land management/tenure security¶; stabilise food production; communication and marketing (roads/markets) reduce post harvest losses; information on agricultural/rural sector- agric census/forest inventory.</p> <p>Food security & agricultural development strategy, Horizon 2015 (June 2004); Sector policy to rehabilitate/ revitalise agriculture and 3 year Action Plan 2002-2004: promote integrated agro-sylvo-pastoral systems; research; zero grazing and improved breeds; participatory extension; access to agricultural inputs; conservation/NRM; crop production ; promote/diversify export crops; processing/ storage; food security and nutrition; support services;. Institutional mechanisms to encourage roles of private sector /NGO in forest management,</p>

Annexe 12 LINKAGES WITH NATIONAL, REGIONAL AND GLOBAL PROJECTS/PROGRAMMES RELEVANT TO KAGERA TAMP

Table 1 Linkages to National, Regional and Global projects/programmes

Relevant projects/Activities	Relationship with TAMP	Mechanisms
<p>1. The Nile Transboundary Environmental Action Project (NTEAP) developed under the multi-donor Shared Vision Programme (SVP) of the NBI promotes cooperation among the Nile Basin countries in protecting and managing the environment and the Nile River Basin ecosystem.</p> <p>GEF World Bank and UNDP, 2004-2009, US\$39M Rwanda, Tanzania, Uganda, Burundi, Congo, D.R., Kenya, Egypt and Sudan (regional unit hosted by Khartoum).</p>	<p>TAMP activities will draw upon expertise of those in ministries, NGOs and local communities trained by NTEAP in environmental management and monitoring and prevention of transboundary erosion and pollution (e.g. through a roster of experts)</p> <p>TAMP project team will liaise with NTEAP to identify opportunities for communities and NGO partners to apply for small grants (US\$10,000-25,000/grant) for community-based approaches to land and water conservation to reduce soil erosion, desertification, pollution and control invasive water weeds.</p> <p>In turn, TAMP will make available resulting guidance, know-how and capacities for sustainable land and agro-ecosystem management (SLaM) to be fed into skills development by NTEAP in the region.</p>	<p>Liaison with project management unit (PMU). Sharing of project workplans, training plans and making available policy and technical materials and guidance.</p>
<p>2. Integrated Management of Critical Ecosystems (IMCE) project in Rwanda focuses initially on assisting the Government in the sustainable management of critical marshlands and later community management of watersheds and buffer zones to reduce pressure on protected areas.</p> <p>GEF/WB, full project February 2006, US\$4.3mn (of which US\$400,000 counterpart funding)</p>	<p>This is a clear complement to TAMP which focuses on agricultural ecosystems and both projects rely on close collaboration between agriculture and environment sectors. Although the geographical coverage differs, linkages can be made for IMCE expertise in status and trends study of wetlands in the Kagera basin and to build on experiences, methods and capacity building from IMCE.</p>	<p>Liaison with PMU. Involvement of IMCE experts in diagnosis of agro-ecosystem - wetlands interactions and capacity building</p>
<p>3. Rehabilitation and Sustainable Land Management Project (PRASAB) in Burundi aims to restore certain degraded lands, develop community and national strategies for sustainable use of natural resources in certain wetlands and swamp areas, promote an integrated approach for watersheds and wetlands management, and emergency support for returnees and internally displaced persons.</p> <p>GEF/WB, 2004-2010, US\$40.47M (of which IDA-US\$35M, GEF-US\$5M, beneficiaries, 0.4M). The project covers all 5 AEZ and 9 provinces,</p>	<p>Collaborative arrangements will be established to ensure the projects are mutually supporting and avoid duplication (e.g. by covering different communes in the 3 shared provinces, sharing expertise and approaches).</p> <p>TAMPs added value will be its capacity to scale up through transboundary collaboration mechanisms with other basin countries, its integrated agro-ecosystem (intersectoral) approaches, conflict resolution and legal awareness/arrangements for improved tenure, land rights and planning at community level, and scaling up of SLaM planning and management techniques and approaches</p>	<p>Liaison by TAMP with PRASABs Inter-provincial management units (IPCMUs) Close coordination and planning in beneficiary districts in the 3 provinces.</p>

Relevant projects/Activities	Relationship with TAMP	Mechanisms
including 3 of TAMP (Kirundo, Muramvya, Mwaro)		
<p>4. Land Use Change Analysis as an Approach to Assessing Biodiversity Loss and Land Degradation (LUCID) was a UNEP/GEF funded targeted research project that generated GIS models and maps of land-use change in some of the concerned districts in Uganda and Tanzania.</p>	<p>Kagera TAMP has used some LUCID information during project formulation and will further use available data and spatial analysis on land-use change analysis, biodiversity and land degradation) in developing its integrated GIS/RS system for the Kagera basin</p> <p>Through district and research staff in Bukoba district, Tanzania, and Rakai district, Uganda, TAMP will also draw upon the methodologies and expertise developed through the completed East African Cross Borders Biodiversity project</p>	<p>Liaison of TAMP team with experts that were involved in LUCID and cross-borders projects and information sharing (e.g. through Regional technical advisory committee RTAC)</p>
<p>5. GEF/World Bank project on Novel forms of livestock and wildlife integration adjacent or protected areas in Africa - Tanzania</p> <p>US\$4,5M IBRD grant, end September 2005-December 2008), supported by FAO/LEAD and ILRI.</p>	<p>Although not in the Kagera basin, and the forthcoming closure of the project, TAMP envisages to build on this project's experience in participatory land use planning and management (PLUM), and developing action plans and establishing village land use committees (VLUM) and wildlife management areas. This will include benefit sharing mechanisms, increasing returns from integrated wildlife and livestock production systems; and decision support tools to strengthen rational resources access and management. The project will have also generated knowledge on wildlife corridors, traditional grazing systems and grazing hotspots, using existing databases on livestock (ILRI, FAO) and wildlife in Tanzania and recent studies on human welfare.</p>	<p>Liaison in FAO HQ through FAO LEAD (Livestock and environment programme-AGA), and in Tanzania through FAO Representation, ILRI and project staff</p>
<p>6. The FAO Africover Project and Information Products for Nile Basin Water Resources Management project GCP/INT/945/ITA</p> <p>Italy main donor of both projects in collaboration with beneficiary Governments</p>	<p>i) The maps of land cover in the four countries from medium resolution satellite imagery, and additional layers (e.g. roads, rivers and water bodies) provide a valuable resource to TAMP although scales and imagery dates differ: Tanzania at 1:200,000 (1997), while Uganda (2001), Rwanda (1999) and Burundi (1999) at 1:100,000. Collaboration with TAMP could include re-mapping to provide a time-series analysis of patterns of changes across the basin from the original Africover and its transformation into land use maps.</p> <p>ii) Use of NBI information products on the website (and Nile Google) and linkages with Internet forum on hydro-meteorological network hosted jointly by the FAO Nile basin project with NELSAP Kagera project and the transboundary hydrological monitoring network.</p> <p>iii) Use, as required, of persons trained by these projects in GIS, field data acquisition, data processing, quality control and use of data/information products (physical & socio-economic data) to support policy analysis and decision-making (in collaboration with NBI SVP Water</p>	<p>Africover data and maps and other. NB information products to be made available and expertise shared in their use, and in the development of relevant layers and information products for decision making across the basin.</p>

Relevant projects/Activities	Relationship with TAMP	Mechanisms
	<p>Resources Planning and Management Project and Socio-Economic Development and Benefit Sharing project.)</p> <p>iv) use as required of results of basin-wide survey and regional workshops on current and potential rural water use and water productivity in irrigated and rainfed agricultural production in support of sustainable rural livelihoods, including supplementary irrigation, water harvesting for crop production and domestic use (in collaboration with SVP Efficient Water Use for Agricultural Production project and Confidence Building and Stakeholder Involvement project).</p>	
<p>7. Various FAO technical assistance projects on land and water management and food security working through participatory learning–action–research processes, such as Farmer Field Schools</p> <p>i) Conservation agriculture and sustainable agriculture (CA-SARD) project phase II in Tanzania and Kenya includes activities in Bukoba district, Kagera and other districts and builds on phase I and a pilot project in Eastern Uganda TCP/UGA/3003.</p> <p>ii) Improvement of Food Security in Cross-border Districts of Burundi, Rwanda and Uganda, in support of the modernization of agriculture and poverty reduction under the NEPAD framework (in selected joint cross-border districts of Burundi (Ngozi, Kayanza); Rwanda (Nyagarare, Bugesera; Nyaruguru; Byumba, Burera), and Uganda (Kabale, Kisoro),</p> <p>iii) Special Programme on Food security (SPFS) building on pilots in Burundi (US\$645,000; 2000-2003 in five representative AEZ) and in Tanzania ; and</p> <p>iv) Human Security Project in Tanzania which aims to strengthen human security through sustainable human development (household food security and nutritional status, strengthen resilience and livelihoods through the FFS approach) in Ngara and Karagwe districts,</p>	<p>FAO will promote exchange of experiences and provide support for linking SLAM with food security and successful FFS / PLAR processes.</p> <p>i) CA is identified as a key technical option in the basin for reversing land degradation, reducing labour and improving livelihoods. However, its scaling up will depend on government and donor support for making available CA tools and equipment and strengthening expertise</p> <p>ii) In supporting target communities, farmers and herders, liaison will be established with partners in the regional food security project and national SPFS projects to share experiences from field activities and better reach poor and vulnerable groups. This could include:</p> <ul style="list-style-type: none"> o more profitable agricultural production systems, increased market access and value-added activities such as: i) expanding markets and strengthening market access opportunities for rural communities; ii) intensifying production and improving quality of selected staple and cash products (mainly crops); iii) improving water resource management; iv) engagement in post-harvest value-added activities. In accordance with COMESA (Common Market of Eastern and Southern Africa) in Burundi, Rwanda and Uganda and regional integration of agricultural development strategies under the NEPAD framework (cross- border districts). o developing viable opportunities for increasing productivity while ensuring sustainable use of agro-biodiversity, e.g. improved processing and marketing of local products from domesticated and wild resources and use of local varieties and breeds. o participatory integrated management of wetlands and valley bottoms to increase agricultural potential and restore watershed productivity (agro-silvopastoral and water management (Burundi). 	<p>Project teams and experts will share expertise and materials for training</p> <p>TAMP PMU will organise exchange visits and field days for learning process and collaboration among districts and projects</p>

Relevant projects/Activities	Relationship with TAMP	Mechanisms
Kagera region, both seriously affected by refugees and HIV/AIDS (mid 2006-2008, Japan funds with FAO, UNDP, WFP, UNIDO, UNICEF and GoT).	<ul style="list-style-type: none"> ○ irrigation rehabilitation, intensified production, livelihood promotion and diversification (aquaculture, village kiosk businesses) and, building from FFS, facilitating emergence of Participatory Farmer Groups (PFGs), which form a legal basis around Savings and Credit associations and/or Water Users Associations in irrigated areas (from mainland Tanzania). ○ targeting vulnerable populations (orphans, children, women and men impacted by influx of refugees, poverty and HIV/AIDS), through Junior (JFFLS) and Adult Farmer Field and Life Schools (AFFLS) (HSP). 	
<p>8. Support to the Akagera Park and its Vicinity in Rwanda (Office of Tourism and National Parks-ORTPN and DED) (followed the GTZ supported “Projet de Protection des Ressources Naturelles du Parc National de l’Akagera (PRORENA)” (phase I completed early 2005) which aimed to strengthen the remaining Akagera park through organisation and management after two thirds of the park was de-gazetted in 1995</p>	This Rwanda project provides an important knowledge base for reducing pressures from agro-ecosystems and identifying needs for biodiversity conservation and long term protection of the park. (This includes support regarding park boundaries, community awareness of the value of the park, income generating activities targeted at park visitors; improved ecological balance of the park).	Liaison by TAMP with concerned national institutions and district partners
<p>9. In Rwanda, the Rural Sector Support Programme (RSSP) is the main agricultural investment nationwide and aims to increase food production and support off-farm income generation in rural areas in all provinces of Rwanda. (World Bank, 2001-2011 US\$100 million)</p>	There is a need to mainstream SLAM in national development strategies and programmes and leverage investment of these programmes for TAMP implementation and scaling up of successful experiences across the basin.	RSSP has confirmed support and cofunding for districts in the Kagera basin in Rwanda The project team, TAC and members of RPSC and RTAC to liaise to make this a reality.
<p>10. In Burundi, the Projet de Relance et de Développement du Monde Rural (PRDMR) promotes smallholder agriculture (extension, livestock, seed multiplication, inputs); land management (wetlands, watersheds, agro-silvo-pastoral integration); support to local initiatives (artisans, literacy, micro-finance, agro-processing); and community infrastructure (schools, health centres, water points, rural roads). (FIDA-OPEP, 2000- 2008)</p>	There is a need to mainstream SLAM in national development strategies and programmes and leverage investment of these programmes for TAMP implementation and scaling up of successful experiences across the basin.	Liaison is needed with PRDMR to develop collaborative and co-funding arrangements. (not yet done as Burundi was not beneficiary of PDFB) As above, project teams, TAC and members of RPSC and RTAC should liaise to make this a reality.
<p>11. In Tanzania, the Agricultural Sector</p>	Close collaboration will be established in the 4 Kagera districts with	MoA has confirmed support

Relevant projects/Activities	Relationship with TAMP	Mechanisms
<p>Development Programme (ASDP) multi-donor programme provides investment through District Agricultural Development Plans and at national level supports policy interventions (institutional framework; support services). The District Agriculture Sector Investment Project (DASIP) (2006-2012, AfDB) supports preparation and implementation of more effective Village Agriculture Development Plans in 25 districts in NW Tanzania, including Kagera region. The Participatory Agricultural Development and Empowerment Project (PADEP) (World Bank, US\$ 70.6 million of which IDA \$56M) aims to sustainably raise food production, income and assets of participating households/groups through community agricultural development sub-projects (840 villages)</p>	<p>DASIP in farmer capacity building; community planning and investment in agriculture, support to rural micro-finance and marketing. TAMP will work with district planners and DASIP actors in effectively programming and budgeting for SLaM activities and ensuring required ASDP funds are allocated for community actions and district technical support.</p> <p>Liaison will be established with PADEP for sharing of methods and tools and investment support in target districts (empowering communities/ farmers' groups for choice of sustainable, productive technology; sharing costs and hence risk of adoption of improved technologies; enhancing demand for products/services provided by private sector; promoting improved land/crop husbandry practices; supporting district decentralization process; improving infrastructure to improve access to markets).</p>	<p>and co-funding through ASDP and DASIP to districts in the Kagera basin in Tanzania</p> <p>As above, project teams, TAC and members of RPSC and RTAC should liaise to make this a reality.</p>
<p>12. In Uganda, Promoting the Modernisation of Agriculture (PMA) aims at poverty eradication by means of a long term strategy for the transformation of the agricultural sector through multi-sector interventions and a decentralised planning process. It is supported by the National Agricultural Advisory Services Programme (NAADS) which aims to establish a demand-driven client- and farmer-led agricultural service delivery system, particularly targeting the poor and women.</p>	<p>The focus of NAADS is on a commodity driven approach for increasing productivity, empowering farmers and building their demand for research and agricultural advisory services. During a recent evaluation, natural resources management was identified as an area requiring specific attention as the short term goals of farmers could lead to increased exploitation and degradation of resources without required investments in restoring natural resources.</p> <p>TAMP will work with NAADS to strengthen support for SLaM and use of FFS approaches</p>	<p>Through MAAIF both PMA and NAADS have been confirmed as cofunders and collaborative partners of TAMP</p> <p>As above the project team, TAC and members of RPSC and RTAC should liaise to make this a reality.</p>
<p>13. In Uganda, National Livestock Productivity Improvement Project (NLPIP) aims to increase household incomes through increased livestock productivity and marketing while taking care of environmental concerns of land degradation and overgrazing due to increased animal population and conventional livestock practices. It will minimise possible water and soil pollution, reduce soil erosion and improve water supply, encourage tree and fodder planting and minimise fire burning. (AfDB, US\$33.6 million, 2006-2011)</p>	<p>NEMA will work closely with NLPIP to monitor and assess the environmental impacts which will be of use for TAMP.</p> <p>Results of NALEP should be integrated into TAMP and vice versa</p>	<p>Collaboration with technical partners and beneficiaries</p>

Relevant projects/Activities	Relationship with TAMP	Mechanisms
The HEIFER project aims to improve livelihoods through provision of heifers to help farmers and rural communities overcome problems of nutrition and increase farmer incomes.		
14. In Uganda Farm Income Enhancement and Forest Conservation Project (UFIEFCP) is nationwide and aims to contribute to poverty reduction (improved incomes, rural livelihoods and food security) through sustainable natural resources management and agricultural enterprise development. (AfDB US\$51 million, 2006-2011).	Lessons from this project will be integrated into TAMP (NRM, rehabilitating degraded watersheds through communities, forest plantations and capacity building).	This is an important cofunding partner

Annexe 13 POPULATION AND SOCIAL STATISTICS IN THE KAGERA BASIN

Table 1. Population Distribution in the Kagera River Basin

Countries sharing the Kagera Basin	Land area km ²	% Land Area of Basin	Basin Share of National Population in millions (of total)	Basin Population Projections, in millions (growth rate)		Population Density in Kagera Basin (per km ²)	
			In 2002	In 2015	in 2030	in 2002	in 2015
*Uganda	5,980	10	0.8 (of 24.4)	1.3 (3.9%)	3.3 (3.9%)	135	221
Tanzania	20,210	34	1.2 (of 34.4)	1.8 (3.1%)	2.9 (3.1%)	61 131**	- 220
Rwanda	20,550	34	7.6 (of 8.6)	10.7 (2.6%)	15.7 (2.6%)	372 <500**	519
Burundi	13,060	22	3.3 (of 6.6)	4.7 (2.9%)	7.3 (2.9%)	250	362
Totals	59,800	100	12.9	18.5	29.2	216	488

* Note TAMP project area proposed to extend to cover all 6 districts in Uganda which include part of the basin, total land area 17,743 km², population 2.4 mn. in 2002, projected to reach 3.9 mn. in 2015 and 7.0 mn. in 2030.

** Effective population density (excluding protected areas, etc.)

Table 2 Social Statistics for the Kagera River Basin

Social statistics	Burundi	Rwanda	Tanzania mainland	Uganda
Adult literacy rate (% age 15+) * ¹ (School attendance: primary + secondary)	59% (35%)	68%	76%,	68%
Poverty % rural population below national poverty line (\$1/day) (average annual)* ²	36% (1990) (\$90)	(\$220)	38.7% (2001) (\$330)	- (\$270)
Poverty, % population <\$1/day consumption	58.4% (2002)	52% *(2000)	49% (1991)	-
% Undernourished * ³	68%,	37%	43%	19%
Life expectancy (years)	43.6			
HIV/AIDS infection, adult rates* ⁴	6%	5.1%	8.8% (Kagera >10%)	4.1%
Persons living with AIDS * ⁴	250 000	250 000	1,600,000	530,000
Estimated number of orphans due to AIDS (lost one or both parents)* ⁴	200 000	160 000	980 000	940 000

*¹ UN Human Development Indicators 2002/2003 (rates for rural areas are likely to be higher e.g. in Tanzania estimated illiteracy of rural (urban) women 41.2% (19%), men 33.1 % (14.2%)

*² World Bank

*³ World Food Programme

*⁴ UNAIDS, 2003 (HIV/AIDS estimates are not always a good indication of scale of the epidemic as much of the data is from antenatal clinics, however access to such services varies greatly between rural and urban areas.⁷

⁷ http://hdr.undp.org/docs/reports/national/URT_Tanzania/Tanzania_2002_en.pdf