UNITED NATIONS ENVIRONMENT PROGRAMME

GLOBAL ENVIRONMENT FACILITY (GEF) GRANT REQUEST

1. IDENTIFIERS

PROJECT NUMBER:	*[Implementing Agency Project Number not yet assigned*
PROJECT TITLE:	**Mount Kenya East Pilot Project for Natural Resource Management**
PROJECT DURATION:	7 Years
IMPLEMENTING AGENCY:	United Nations Environment Programme (UNEP)
EXECUTING AGENCIES:	International Fund for Agricultural Development (IFAD) working with the Ministry of Water Resources Management and the Kenya Wildlife Service
REQUESTING COUNTRIES:	Republic of Kenya
ELIGIBILITY:	CBD ratified on 26 July 1994, UNFCCC on 30 August 1994, and UNCCD on 24 June 1997 by the Government of Kenya.
GEF FOCAL AREA:	Multifocal: Land Degradation, Biodiversity, and Climate Change.
GEF PROGRAMMING FRAMEWORK	**OP# 12 Integrated Ecosystem Management** with relevance to OP# 15 on Sustainable Land Management, OP# 4 on Mountain Ecosystems and OP# 3 on Forest Ecosystems.

2. SUMMARY

The overall objectives of the Mount Kenya East Pilot Project for Natural Resource Management is to reduce poverty through improved food security and income levels of farmers and rural women by promoting more effective use of natural resources, improve access and management practices for water resources and introduce better farming practices for sustainable land use and water resources. The project seeks to contribute to the government's poverty reduction and environmental conservation strategies. The project's immediate objective is to enhance equitable use of natural resources with particular focus on environmental conservation. The project area covers the National Park and Reserve and river sub-basins in five districts on the eastern side of Mount Kenya, three of which border the protected area. The project uses the two-pronged approach to environmental conservation by addressing the causes and impacts of environmental degradation, since reducing anthropogenic threats and maintaining the ecological integrity of the protected areas depends on addressing poverty in the agricultural areas. Thus, IFAD-financed activities in the agricultural areas are focused on improving rural livelihoods, while GEF will finance ecosystem management activities in the protected areas of Mount Kenya which contain rich biodiversity and fauna and flora species of global conservation significance. There are six species of large mammals of international significance in Mount Kenya and several rare and restricted forest ecosystems. The project has four components: (a) development of tools for watershed development within the protected areas, (b) ecosystem conservation and management including forest rehabilitation, strengthening of the capacity of stakeholders for ecosystem management and research, monitoring and information management, (c) the reduction of human/wildlife conflicts for improved livelihoods and protection of community investments and (d) some support to KWS for the management of GEF financed activities as well as for the monitoring and evaluation of project impacts on environmental condition and biodiversity.

There are four outputs from GEF funding, namely (a) rehabilitation of degraded areas and protection of forests (b) strengthened capacity for ecosystem management, community involvement in forest

management supported through participatory forest management for equitable benefits, (c) an adaptive long term ecological monitoring and information management system for Mount Kenya and (d) sustainable mechanisms to reduce human/wildlife conflict, along with a long-term strategy to address migratory issues. Overall, GEF support will complement, benefit from and contribute to other ongoing and planned donor financed activities as well as support GOK to implement its natural resource management strategies and fulfil international commitments.

3. COST AND FINANCING

GEF	Project	4 700 000
	PDF A	-
	PDF B	350 000
Sub-Total		**5 050 000**
Co-Financing:	Government of Kenya Contribution	2 010 000
	Beneficiary Contributions	3 110 000
	IFAD Contribution	16 740 000
Subtotal Co-financing: (including PDF B co-financing)		**21 860 000**
Total Project Cost:		**26 910 000**

4. Associated Financing

Mostly other IFAD funded projects in the Mt Kenya region amounting to a total of **US$40,950,000**.

The **Eastern Province Horticulture and Traditional Food Crops Project (EPHTFCP)** is a seven-years project (1995-2002), successively extended for further 3 years (2003-05), of about 13.6 million USD, of which USD 12.1 million from IFAD, 1.2 million USD from GoK and the remaining 0.3 million USD from the beneficiaries.

The **Central Kenya Dry Areas Smallholder Project** (CKDAP, 2001-07), covering the dry areas of 5 districts, two of which (Nyeri and Kirinyaga) surround Mt. Kenya on the South and West sides; Laikipia district, in the North-West side of Mt. Kenya area, is being considered for inclusion in CKDAP for aspects related to water management and support to water users' associations.

5. Operational Focal Point Endorsement

Prof. Ratemo W. Michieka, Director General, National Environmental Management Agency, Kapiti Road, P.O. Box 67839, Nairobi, Kenya, Tel 254 20 609013/27/79, Fax: 254 20 608997, email address dgnema@swiftkenya.com. Endorsed on 17 August 2004.

6. IA Contact

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MOUNT KENYA EAST PILOT PROJECT FOR NATURAL RESOURCE MANAGEMENT

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LIST OF ACRONYMS

asl	above sea level
AWPB	Annual Workplan and Budget
CBO	Community-Based Organizations
CCF	Chief Conservator of Forests
COMPACT	Community Management of Protected Areas Conservation
CWS	Community Wildlife Service
DFID	Department for International Development
DPSIR	Driving force-Pressure-State-Impact-Response
EIA	Environmental Impact Assessment
ERS	Economic Recovery Strategy
EU	European Union
FORREMS	Forest/Range Rehabilitation and Environmental Management
GEF	Global Environment Facility
GIS	Geographical Information System
GOK	Government of Kenya
IFAD	International Fund for Agricultural Development
KEFRI	Kenya Forestry Research Institute
KWS	Kenya Wildlife Service
M&E	Monitoring and Evaluation
MIS	Management Information System
MISO	Management Information Officer
MKEPP	Mount Kenya East Pilot Project for Natural Resource Management
MWRMD	Ministry of Water Resources Management and Development
NEMA	National Environment Management Authority
NGO	Non Government Organizations
NRC	Non-Residential Cultivation
NRM	Natural Resource Management
RWUA	River Water Users Associations
PRSP	Poverty Reduction Strategy Paper
SGP	Small Grant Programme (GEF)
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Education, Scientific and Cultural Organization
USAID	United States International Development Assistance
USD	United States Dollar
WRMA	Water Resources Management Authority

I. CONTEXT

Environmental and Socio-Economic context

1. The Mount Kenya region[1] is one of the highest potential agricultural regions in Kenya where only 17% of the land surface is classified by FAO as agriculturally useful. The sloping agricultural lands surrounding Mount Kenya encircle the principal watershed of the country, which was gazetted as a Forest Reserve in 1943 while the upper altitude areas were designated as a National Park in 1949. Only in few other places does a dense population and intense land use system exist so close to protected areas and wildlife as around Mount Kenya. The stresses on both the agricultural land and the remaining natural habitats and forest reserve are intense and require an integrated ecosystem management approach. If current trends continue, degradation of the entire ecosystem will worsen, with threats to the integrity of the protected areas becoming more acute, and land degradation (water loss, soil erosion and declining soil fertility) reducing the future livelihood options of the surrounding population.

2. Mount Kenya National Park and National Forest Reserve (and the Aberdares) together with the surrounding agricultural lands respectively form the watershed and the water catchment areas for two major rivers, the Tana and the Ewaso Nyiro, which serve about three quarters of the surface area of the country, with the Tana River providing water to about 50% of the country's population. While conservation has been a long-term priority for Kenya since independence, the economic importance of Mount Kenya as the principal watershed of the country was the major factor driving the initial gazettement of the area as a National Park and Forest Reserve in the 1940s, and the increased efforts of the Government towards conservation in the area since 1999. Furthermore, in global terms the National Park and Reserve was declared a World Heritage site in 1997. Together, the National Park and Reserve represent one of the most important pristine mountain ecosystems in the world, and the World Heritage Commission has described Mount Kenya as "one of the most impressive landscapes of East Africa with its rugged glacier-clad summits, Afro-alpine Mooreland and diverse forest which illustrate outstanding ecological processes."

3. Mount Kenya was formed by volcanic activity 100-400 million years ago, has a base diameter of approximately 120 km and straddles the equator in the Central Highland Zone of Kenya, 193 kms north-east of Nairobi. It is the country's highest mountain and the second highest in Africa, with its icy summit reaching 5 199 m. Water catchment, vegetation patterns, rainfall and use are determined by altitude, and the original and current land use is summarized below in Table 1.

Table 1. Catchment, Altitude and Vegetation Zones of the Mount Kenya Region

Zone/Original vegetation		Altitude	Annual Rainfall	Present land-use
Watershed and Upper catchment	Afro Alpine	> 3 350m asl	800-1200 mm	National Park
	Forest zone	2 400-3 350m asl	1600-3000 mm	Upper montane forest classified as National Reserve
Middle catchment	Woodland	1 500–2 200m asl	1400-2400 mm	Tea zone
		1 300–1 800m asl	1400-2000 mm	Coffee and banana zone (south east and west); ranching in drier north
		800–1 750m asl	800-1600 mm	Tobacco/maize/millet/cotton zones
	Bushland	600–900m asl	500-900 mm	Semi-arid pastoralist zone (ASAL)
Lower catchment	Bushland	Below 600m asl	Below 800 mm	Pastoralism and agro-pastoralism (Arid and Semi-arid Lands)

Protected Areas

[1] See Annex 4 for a Map of the Project Area and a Map of the National Park and Reserve.

4. The total protected area of the Mount Kenya Ecosystem is 2 700 km^2. The Forest Reserve, now gazetted as National Reserve, covers 2 000 km^2 or about 74% of the protected area, while the balance (about 700 km^2) is gazetted National Park. There are four distinct ecological zones from bottom to the top; the forest zone comprising indigenous and plantation forests lying between 2 000-3 000m above sea level, the moorland 3 300-4 000 m, afro-alpine zone 4 000-5 000 m and the peak zone lying over 5 000m comprising bare volcanic rocks and the tip is ice-covered. The National Park covers the upper areas above 3 200 m with the exception of two salients which descend to 2 450 m.

5. The mountain ecosystem is an important watershed area and experiences two rainy periods, the long rains (March-June) and the short rains (October-December). The rainfall varies from 900mm annually on the leeward north western side to 2 300mm on the windward south eastern side. The Reserve surrounding the mountain contains the single largest block of continuous indigenous forests in Kenya; while plantation forests cover about 9% of the area. The conjunction of the altitude and the rainfall received contributes greatly to the biodiversity of the mountain in terms of flora and fauna:

Global Importance

6. Mount Kenya National Park and Reserve constitute an important reservoir for biodiversity in terms of both flora and fauna. As the National Park is located at higher altitudes, most animals are found in the Reserve, where forests and vegetation are more extensive.

7. **Diversity of Flora.** Vegetation zones and species distribution are distinguished according to the different climatic zones and altitudes, most obviously through variation in vegetation structure, cover and composition. Some 880 plant species belonging to 479 genera in 146 families have been recorded in the forests of Mount Kenya. There are at least 11 strictly endemic species of higher plants and more than 150 species that are near endemic.

8. On the more moist **eastern and southern slopes**, the "Tea Zone" occurs at the reserve boundary through the famous Camphor forest (*Ocotea usambarensis*) (1 900-2 400 m) that was once dominated by *Ocotea usambarensis, Xymalos monospora* and *Syzigium guineense* but is currently characterized by regeneration of secondary vegetation of *Macaranga kilimandscharica* at the lower and medium altitudes and *Neoboutonia macrocalyx* at higher altitudes. *Newtonia* forest occurs on the eastern slopes at lower altitudes (1 200-1 800 m) near rivers and at lower forest edges. This forest type is rare in Kenya but not uncommon in neighbouring countries. On the **south-western slopes** the forest is dominated by *Cassipourea malosana*. Above the *Ocotea* and *Cassipourea* associated zone comes is the "Podo" forest (2400-2800 m); which is dominated by *Podocarpus latifolia* and mixed with *Muxia congesta* at lower altitudes and with Giant heath at higher altitudes. Above the Podo forest is the bamboo forest (*Arundinaria alpina*), which occurs between 2 400 m-3 000 m and extends to the western slopes but is absent in the north. The alpine zone starts at above 3 000 m, and contains alpine vegetation, bare rocks and snow covered peaks. *Juniperus-Olea* forest is found on the drier **western and north-western slopes** of the National Forest Reserve (1 950-2 250 m), where cedar (*Juniperus procera*) is mixed with *Podocarpus falcatus* and olive (*Olea capensis* and *O. europea*) at lower altitudes, *Ekbergia capensis* at mid-altitudes and *Podocarpus latifolia* at higher altitudes. On the **northern slopes** of Mount Kenya Forest Reserve, subalpine *Hagenia* forests (Kosso) are dominated by the large, often horizontal-growing *Hagenia abyssinica* mixed with *Juniperus procera* (lower altitudes) and Giant heath (higher altitudes). About 20 500 ha or 10% of the Reserve has been converted into fast growing softwood plantations mainly of *Cupressus* spp., *Pinus* spp. and *Eucalyptus* spp.

9. Some rare and restricted forest types occur at lower altitudes. (a) moist *Ocotea* forests (*Ocotea usambarensis*) occur between 1 500-2 400 m on the southern and south-eastern slopes and are the largest known surviving block of this type, but selective logging and clearing at its lower margins have disturbed and removed large tracts of the forest; (b) *Newtonia* forest occurs in the lower Imenti Forest east of Meru and on the eastern slopes at lower altitudes; this forest type is rare in

Kenya, and on Mount Kenya it occurs as impoverished remnants; (c) *Croton sylvaticus-Premna* forest occurs in the Upper Imenti Forest near Meru at altitudes of 1 500-1 800 m; this is the only known occurrence of this forest type. (d) *Croton-Brachylaena-Calodendrum* forest also occurs near Meru at altitudes of 1 450-1 850 m. This forest type is restricted to Kenya and two thirds of its total area of 6 200 ha occurs on Mount Kenya.

10. **Diversity of Fauna.** At least six rare or threatened mammal species occur in the forests of Mount Kenya: (a) black rhino (*Diceros bicornis*); (b) leopard (*Panthera pardus*); (c) Black-fronted duiker (*Cephalos nigrifrons*); (d) Giant forest hog (*Hylochoerus meinertzhageni*); (e) African elephant (*Loxodonta africana*) and (f) Bongo (*Tragelaphus euryceros*). Mount Kenya supports the country's largest remaining forest population of elephants estimated between 1200-2000 individuals. Elephants was listed as endangered by CITES in 1989 in response to the alarming decline in elephant numbers at the hands of ivory hunters from 167 000 in 1973 to 16 000 in 1989. The Bongo, an African antelope, which is extremely rare was last sighted on Mount Kenya in 1994. The bongo has been threatened by both hunting and habitat shrinkage coupled with its high susceptibility to the viral disease rinderpest. The bongo has been the object of a long-term captive breeding programme initiated with private funds in the 1960s in the United States. Twenty bongos were returned to the Mount Kenya area in February 2004, with the expectation that, after acclimatisation, the third or fourth generation of these animals will be released into the forest if protection from poaching can be assured.

11. Other forest antelopes include the duiker (*Neotrragus moschatus*), Harvey's red duiker (*Cephalophus harveyi*); a forest sub-species and the common duiker (*Syvicapra grimmia altivallis*) a moorland sub-species. The animals are spread around the mountain but their densities are low in the southern slopes. Cape buffaloes occur on the western slopes of the mountain but are rare on the eastern slopes possibly because of their preference for open bushland/grassland where poaching is common and also because of their susceptibility to rinderpest.

12. Three large carnivores are found in Mount Kenya; the leopard, the spotted hyena, *Crocuta crocuta* in the northern and western slopes, and the smaller striped hyena which is rare but has been spotted in the forest adjacent to air-strip near Nanyuki town. The Cheetah *Acinonyx jubatus* and mountain wild cat *Felis lybic* occur on the mountain.

13. Mount Kenya is an important bird area and home to the threatened and little-known Abbott's starling. Fifty-three out of Kenya's 67 African Highland biome bird species, at least 35 forest-specialist species and six of the eight species from Kenyan Mountains Endemic Bird Area reportedly occur on Mount Kenya.

14. **Carbon sequestration**. The forests on Mt. Kenya provide important sinks for carbon. Sustainable management of the forest and surrounding agricultural lands will enhance sequestration of carbon both above and below ground and hence contribute to reduction of greenhouse gas emissions from the ecosystems on Mt. Kenya.

15. **Mount Kenya Global Atmospheric Watch Station**. The Mount Kenya Watch Station is one of the six monitoring stations established by World Meteorological Organization, Global Atmospheric Watch programme in 1990s. The station was established in 1993 and is situated on the northern slopes of Mount Kenya National Park at 3,897m (0^0 3', 37^0S18'E). It is the only station located at the equator, and its mission is to carry out long-term measurements of greenhouse gases and aerosols in equatorial Africa and to assess the contribution of agricultural burning and forest clearing activities to the build up of regional ozone. The current activities include measurement of meteorological parameters, trace gases (ozone and carbon monoxide) and aerosols (black carbon) in addition radiation (global, diffuse and direct radiation). Other measurements include precipitation (analysis of mass, conductivity and sensitivity). Observational data is relayed to US National Renewable Energy Laboratory while ozone and carbon monoxide data are sent to Swiss Federal laboratories for material testing and research. The information is used to assess ozone depletion, climate change and acid rain.

The siting of the station on Mount Kenya was based on the criteria of situating stations in a remote area where no significant changes in land use are expected.

Land Use

16. The area surrounding the National Park and Reserve is one of the highest agricultural potential areas in Kenya. It is densely populated, with the result that there are serious, complex and competing local demands in terms of human development priorities and conservation objectives for the greater national good. The area has experienced a tenfold increase in population within the past forty years. About 2.7 million people live in the five districts surrounding the National Park and Reserve representing about 10% of the national population. An estimated 800 000 people live within a 10 km diameter of the boundary of the Forest Reserve. Population density is highest in the southern and eastern sides due to high rainfall and relatively fertile soils. The average density is about 350 people km^2 in parts of Embu but can be as high as 1 000 people km^2 in some areas bordering the forest (Meru).

17. The early inhabitants of the mountain slopes were wildlife and hunters. However, the fertile soils attracted farmers who settled in the lower slopes. The subsequent population increase led to gradual encroachments into the upper slopes, destruction of forests and gazettement of the forest areas as protected areas in the 1940s.

18. The agricultural lands surrounding the National Park and National Reserve are held under freehold (private ownership). Small-scale cash crop and subsistence farming dominant, with land-use and cropping intensity increasing with elevation because of better soils and water availability. Farm size varies from 0.2 ha to 1.6 ha, with tea bushes covering an important share of the available land, except for small plots on valley bottoms where vegetables and other horticultural crops are grown. Small plots near the homestead are used for subsistence crops such as maize and beans, and farm forest trees are planted along the boundaries of the plots. A variety of crops are produced including maize, beans, arrowroot, yams, bananas, macadamia nuts, passion fruit, coffee and tea as well as some livestock. Most households use river water for irrigation and about 70% have drinking water.

19. Agroforestry and farm forestry are both found in the area, including in the tea zone. Trees are planted around the homestead and along farm boundaries. In agroforestry and farm forestry systems, the tree mix consists of both indigenous and exotic tree species but faster growing exotics dominate. Such species include silky oak (*Grevillea robusta*), blue gum (*Eucalyptus saligna*), river red gum (*E. camaldulensis*), *Cassia siamea, Leucaena leucocephala* and the cypress (*Cupressus lusitanica*). Farm forestry and agroforestry are an increasingly important livelihood activity as a result of the ban on logging in the Mount Kenya Reserve since 2000.

Mount Kenya and the National Economy

20. **Agriculture.** Kenya's economy relies heavily on the agricultural industry. It accounts for 60% of total employment and contributes 25% to Gross Domestic Product. Kenya's income from export of agricultural products is almost USD 682 million annually, of which USD 530 million comes from tea and coffee, Mount Kenya area is an important tea and coffee producing area and the teas produced are of the finest quality.

21. **Water.** While Mount Kenya National Park and Reserve were created to conserve unique landscapes and wildlife, of immeasurable importance to the local and national economies, its principal contribution to the Kenya economy is its value as a watershed and catchment area. It is one of the five main water towers of Kenya and is the source of two of Kenya's largest rivers, the Tana and the Ewaso Nyiro producing 50% of the entire flow of the Tana River, the largest and most important river basin in Kenya. About 50% of Kenyans rely on water that originates from the mountain and it provides 70% of the country's hydroelectric power. The water resources provided by Mount Kenya

are used for irrigation (which accounts for over 75% of total water demand) of cash and export crops. As one of the most important agriculture areas in the country, there is increasing demand for irrigation water on the slopes of Mount Kenya, particularly to support horticulture production. But water usage in the area affects water availability in lower lying drier areas. Water is also important for electricity generation, industry, commercial and tourism operations, and livestock. The Tana River and Ewaso Ngiro North River drainage basins that surround the mountain are important for maintaining the biodiversity and ecological functions of natural ecosystems within the concerned highlands and lowlands. These basins cover 58% of Kenya, provide 21% of the annual river discharge and support approximately 50% of the people.

22. **Ecological processes.** As well as providing tangible goods and services, the Mount Kenya ecosystem drives crucial ecological processes and provides multiple goods and services that benefit humans: e.g. water, climate-regulation, erosion control, pollination, pest management, processes that influence nutrient and hydrological cycles, waste and pollution control, and heritage (cultural and environmental history). Such processes are essential to maintain ecosystem function and sustainable use of natural resources and rural livelihoods.

Importance to the Local Economy

23. **Agriculture** is the main economic activity in the project area. The type of agriculture practiced and potential productivity depends mainly on altitude which in turn determines temperature and rainfall. On the eastern and southern slopes of the mountain intensive arable farming is practiced. In the upper reaches of the catchment, potatoes, pyrethrum and tea are grown. In the mid-altitude zones, coffee, maize, beans, rice and bananas and mixed livestock are grown, while in the lower zone, tobacco, cotton, sorghum, millet and pigeon peas and cowpeas are most common. Income varies between agricultural zones with farmers in the tea zone earning the highest gross income and those in the cotton/tobacco zone earning the least.

24. **Forest products.** Communities living in the environs of Mount Kenya heavily rely on the use of forest products, which nearly double average household income. Households adjacent to the forest use it more than those who live further away, poor households make more use the forest than the rich, and farms with fewer trees make more use of the forest than farms with many trees. Forest uses include firewood, grass harvesting for animal fodder, livestock grazing, for hanging traditional beehives and water collection from mineral saline springs for medical and cooking purposes. Of the 284 woody species that occur in the forest, 26% are used for timber, 16% for medicinal purposes, 9% for their edible fruits and 16% for purposes such tool hands, soaps and arrow poison. In addition, many households have or have had a shamba (farm) in the forest. The most common way for communities to access gazetted forest resources is through the payment of monthly or annual fees to the Forest Department. Access for gathering firewood and fodder tends to be used by poorer households; less poor households tend to buy their firewood from others and grow their own fodder. In some cases, the department waives fees in exchange for communal labour for raising and planting tree seedlings and forest management.

25. **Tourism** is an important economic activity within and in the environs of the mountain. Mount Kenya is known for its unique wildlife but most visitors come with the primary objective of climbing the mountain. In 1996/97, 14 000 tourists visited Mount Kenya National Park, of whom 70% were local. Income from tourism in the protected areas of Mount Kenya is about USD 700 000 per year but the National Reserve has substantial income earning potential by offering a diversity of activities such as bird watching, trout fishing, walking and wilderness trails to increase the number of visitors. The earnings of the National Park and Reserve are retained for defraying the cost of its protection and management.

Policy and Institutional context

Policy and Legal Context

26. **Poverty Reduction Strategy Paper (PRSP),** completed by the Government of Kenya (GOK) in September 2001, aims at improving participation and ownership of poor people in the development process in order to reduce poverty. Transparency, openness and accountability in all aspects of national planning and prioritisation of development activities is the means through which there will be an equitable distribution of national resources and development initiatives. Agriculture and tourism are the first and second sector priorities, while conservation, sustainable use and management of the environment and natural resources (land, water and forests) are to be an integral part of national planning and poverty reduction efforts. The PRSP makes specific note of the need to address the rapid depletion of forest cover and the natural resource base in the Mount Kenya Region[2].

27. **Economic Recovery Strategy.** A new Government was elected in December 2002 in Kenya, and has prepared its Economic Recovery Strategy (ERS) which build upon the PRSP. The ERS was published in June 2003 and is based on four pillars; (a) macro-economic stability, (b) strengthening institutions for governance, (c) rehabilitation and expansion of physical infrastructure and (d) investment in human capital of the poor. The strategy underpins the recovery strategy on improvements in productive sectors including agriculture, tourism, trade and industry. Intervention in agricultural sector would focus on providing a single enabling legislation to replace the existing large number of statues, rationalising the roles and functions of agricultural institutions to empower the poor farmers increase institutional efficiency, strengthening extension services and increasing access to credit by the smallholder. Poverty reduction through improved natural resources management and promotion of income generating activities are priorities under the ERS.

28. There has been a long on-going dialogue with the Government of Kenya (GOK) about environmental issues, which are strongly felt by a number of local interest groups, as well as with donors. The revision of the legal framework for key sectors has been long-term effort, starting in the mid-1990s, and has been subjected to domestic political debate and discussion with donors. There are about 77 statues that currently relate to the conservation and management of biodiversity and the environment in Kenya, but over the past ten years GOK has undertaken substantial efforts to modernise its legislative and regulatory framework in line with current principles for natural resource management.[3] The **Environmental Management and Coordination Act** (1999) is the key legislation, covering issues relating to environmental protection and quality standards. Recent shifts in policies and legislations relating to management of forest and water resources have shown the Government's intention to promote community participation in ecosystem management.

29. **Water Resource Management Policy.** After an extended internal process of review and revision, the Water Act was passed in April 2002, and provides for the management of water resources along ecological and catchment areas, while promoting community participation in catchment and water resource management. The Water Act has entrusted the newly established Water Resource Management Authority (WRMA) with the responsibility of conserving water catchment areas. A number of government institutions have mandates and useful services related to the conservation of catchment areas and the proposed GEF Alternative is focused on piloting the implementation of catchment conservation activities and better local level water management within the agricultural areas.

[2] Poverty Reduction Strategy Paper for the Period 2001-2004, prepared by the People and Government of Kenya, September 2001.
[3] A review of the relevant legislation was provided as part of the Concept Note, approved by the GEF Council in May 2003. The legislative review has been financed by IFAD as part of its project preparation process.

30. **Forest Policy.** There has been a long process of national consultation relative to the forestry sector, which had lead to the preparation of the Kenya Forestry Master Plan in 1994, followed by the Kenya Forest Policy in 1999. The new Government has submitted a draft Forest Bill to Parliament in early 2004. The new Forest Bill aims at bringing together communities, private or public enterprises to increase production of forest products while also ensuring the conservation and protection of gazetted forest reserves. The new bill, which is currently under revision, provides for the creation of community forests under local management, and a clear role for a Kenya Forest Service (through re-structuring of the current Forest Department) with a focus on policy matters, regulations, technical advice and monitoring. An important provision is that the Forest Bill 2004 makes excision of forest areas difficult because of provisions requiring public consultations, parliamentary approval, and the requirement of environmental impact assessment to be undertaken before any forest areas are legally degazetted. These new approaches have already been pilot-tested under a number of different local activities supported by GOK and donors, but Government technical services and communities will require training in the implications, rights and responsibilities under the new policy. For efficient management of forest resources, the Bill makes a far reaching provision of converting Forest Department into an autonomous public institution "parastatal to be called "Kenya Forest Service" and has provision for forest adjacent communities to be involved in conservation and management of forest reserves under the theme "Community Participatory Forest Management.

31. **Protected areas.** Three categories of protected areas are recognised in Kenya: (a) National Parks, (b) National reserves and (c) marine National Parks/Reserves. National parks are fully protected and human activity is permitted strictly as an appreciation of wildlife in its natural state. National Reserves were conceived in recognition of the need for local communities to continue benefiting from forestry and water resources while at the same time conserving wildlife. Marine Parks and Reserves follow the same approach.

32. **Wildlife.** Wildlife management is based on the Wildlife Conservation and Management Act (amended in 1989). Wildlife policies and laws have been geared towards the preservation of the status of pristine areas to attract tourists and the Kenya Wildlife Service (KWS) was created for implementing the policy in 1989.

Institutional Framework

33. **Ministry of Environment and Natural Resources (MENR)** has the principal responsibility for the management of environmental affairs in Kenya. It is responsible for policy and legislative work and houses the recently created National Environmental Management Authority (NEMA). NEMA's functions include environmental research, education and awareness, provision of advice to Government on regional and international agreements, and setting standards and enforcement of environmental impact assessments. The Ministry is organised under the direct management of a Permanent Secretary, with three Deputy Secretaries for the Environment, Natural Resources and Geology. The Forest Department falls under the institutional responsibility of MENR.

34. **Kenya Wildlife Service** (KWS) was established as a parastatal organisation in 1989 for the conservation and management of National Parks and the protection of wildlife. KWS initially focused on wildlife protection inside National Parks, but over 70% of the wildlife in Kenya is located outside National Parks, so KWS is also responsible for the control of the movement of wildlife to prevent destruction of crops and ensure the physical safety of people. Over the past 15 years, its activities have evolved to increasingly focus on the management of the competing needs of people and animals within the context of promoting conservation. KWS created its Community Wildlife Management Service (CWS) in 1992, which works closely on conservation issues with communities residing outside protected areas, and with other GOK technical services in the concerned administrative Districts. Wildlife management falls under two departments within KWS; the Park Service and the Community Wildlife Service. The Park Service is responsible for patrolling and management of National Parks, while Community Wildlife Service mobilises, educates communities on sustainable

wildlife conservation and management outside protected areas. Since the major watersheds of the country are located in National Parks, KWS is also responsible for watershed protection and management. KWS is currently under the Ministry of Tourism and Wildlife.

35. **Forest Department.** The Forestry Department (FD) under MENR has four responsibilities: (a) legal security of land for forestry purposes and boundary maintenance; (b) protection against tree poaching, grazing, fires and diseases (c) utilization, which deals with licensing for both major and minor forest products (timber, firewood grass withies, honey etc); and (d) policing, which includes patrols of forest reserves, impounding and confiscation of illegally obtained forest produce and prosecution of offenders. Increasingly, a fifth category of the FD's duty includes forest extension work in areas outside gazetted forest areas. This is as a result of the realization that farm agro-forestry is important for provision of fuelwood and construction material and relieves pressure on forest wood products. The management of forests is directed by the Chief Conservator of Forests. When the Forest Bill 2004 becomes law, the Forest Department will be transformed into Kenya Forest Service (along the lines of the Kenya Wildlife Service) and will be responsible for the management of national forests. The pending Forest Bill foresees an increased role of communities in the management of forests with forest management activities transferred to the new Kenya Forest Service, which will also provide forest extension services on private land.

36. **Ministry of Water Resources Management and Development (MWRMD)** is responsible for water resource management, and is currently working on the modalities for implementing the Water Bill 2002. The First National Water Resources Management Strategy has been developed to lay out practical steps to improve water resource management. Following the enactment of the Bill, there have been water sector reforms that have seen the separation of functions of water service and water resource management. The role of the ministry is policy formulation and support to the new institutions responsible for management of the water resources, the conservation of water catchment areas, the promotion of community participation in catchment and water management, monitoring the water resources and apportioning the water resources for different uses. MWRMD has qualified technical staff at the District level, and works closely with the District staff of other technical ministries such as the Ministries of Agriculture and Livestock and the Department of Social Services.

II. THE BASELINE

Current Situation

Driving Forces

37. Ecosystem degradation in Mount Kenya is caused by a complex and dynamic mix of driving forces and resultant pressures. Increasing population and poverty levels are the primary forces, or root causes, that drive local communities to increasingly turn to forest resources for both domestic consumption and income generation. Institutional constraints also drive environmental degradation by limiting the ability of land managers to regulate and conserve natural resources. Agricultural land management practices also have direct impacts on the condition of natural resources[4]. The four major driving forces, or root causes, that generate various pressures on the Mount Kenya Ecosystem are (a) poverty, (b) population pressure, (c) institutional constraints and (d) climate change.

38. **Poverty.** Since the project area is considered of high agricultural potential, it would be expected that poverty rates would be lower than the national average (60%) but in fact poverty in the area is representative of the country, and is increasing. A combination of factors lead to poverty in the Mount Kenya area including population pressure, market failure of traditional cash crops, small farm

[4] See Annex 5 Dynamics of Environmental Degradation in the Project Area for a discussion of agricultural practices and their environmental consequences.

holdings, low productivity and over-exploitation and degradation of natural resources. Nearly 60% of the population is poor or very poor. Coffee farmers have been affected by low global coffee prices, and their incomes have dropped drastically. Farmers in the tea zone have the highest income yet 44% are ranked as poor. The proportion of households that are poor in the cotton/tobacco zones and rangelands are similar with 50% and 52% respectively. There is a direct relationship between poverty and environmental degradation. Land degradation, including loss of soil carbon, and loss of biodiversity exacerbates poverty through soil degradation resulting in declining yields and employment and incomes, and reduced food security and nutrition.

39. **Population pressure.** The environmental impacts of population growth depend as much on patterns of resource use as on absolute numbers of people. Poor management practices can have detrimental effects regardless of population density while optimum resource management and land use patterns can sustain productivity even under heavy population pressure. The steep increase in population density around Mount Kenya in recent years in the absence of sustainable natural resource management practices is exerting increasing pressure on natural assets. The key ingredient to minimising the impacts of population pressure on natural resources across agricultural landscapes will have to come from better crop husbandry and soil and water conservation, and increased household incomes from alternative livelihood activities.

40. **Institutional issues** have constrained the effective protection, regulation and conservation of natural resources. Control of forest resources has largely been in the hands of the regulatory authorities and there has been a clear separation between the government and the people who depend on those resources. Past forest policies and legislations have largely excluded involvement of communities. As a result, forests have been viewed as "government forests" as communities derive few direct benefits from the resources. Additionally, the lack or failure of adequately supported monitoring and information systems means that it has not been possible to accurately assess the status of biodiversity and condition of natural resources and to implement long term and proactive ecosystem management plans and strategies.

41. Lack of environmental awareness and/or incentives at local level has also constrained conservation efforts. In the past, forest-adjacent communities were excluded from forest management and conservation activities and so have had no direct stake or real interest in the sustainable use of forests. In the last few years, there have been a number of efforts to involve communities in conservation activities, and there are now numerous self-help groups around the mountain who are actively engaged in conservation activities including water management. Many of these groups are self-driven and were born from a genuine and collective commitment to conservation and sustainable resource management.

42. Through the recent legislation (Environmental Act 1999, Water Bill 2002 and the pending Forest Bill 2004), the policy framework has changed to focus on better natural resource management by ecological zone, to decentralise decision-making and responsibility to district administrative services and to involve local communities. Application of the new enabling policy in favour of community involvement in natural resource management will require improved institutional capacity and awareness and a shift in emphasis from regulation to participatory management. Building understanding among local populations of the environmental consequences of their activities is central to this process, and the new policy frameworks for water and forests aim to address this issue, but training is required of field level technical GOK staff in the new policies, along with measures to increase community awareness and understanding of their roles.

43. **Climate change.** Anthropogenic threats and impacts are often obvious and quantifiable. The impacts of climate change on species and ecosystems, however, are far more subtle, accumulative, long term and not well understood. What is clear, however, is that destruction of forests and soil degradation make significant contributions to climate change by reducing carbon stores and increasing atmospheric emissions and that many of the factors determining carbon release are

influenced by land management practices. Whilst estimates for loss of carbon through land degradation in the Mount Kenya region are not available, it can be assumed that the significant loss of vegetation cover in both protected and agricultural areas has resulted in substantial losses in carbon storage and sequestration potential.

44. Mountain ecosystems such as Mount Kenya are relatively susceptible to the negative impacts of extensive perturbations such as climate change. According to predictions, as temperatures rise tea plantations surrounding Mount Kenya will be in danger of reduced production. Farmers would most likely move to higher cooler slopes and forests would be under pressure to accommodate new agricultural areas, which would further increase the rate of erosion and directly threaten habitats and wildlife. The drain on montane water resources would in turn affect the water supply of thousands of people. Increasing difficulties in cultivating important cash crops would also deepen the economic hardships faced by Kenya as a large proportion of Kenya's income is from the export of agricultural products, such as tea and coffee.

Pressures (Threats) and Impacts

45. **Unregulated and excessive water use** for agricultural production has reduced the reliability of downstream water supply, impacted on riparian environments and decreased water quality. Within the tea zone, numerous small-scale irrigation community projects have been constructed and tap water from the forest. With the collapse of the cotton industry farmers have turned to irrigated crops and irrigation now accounts for over 75% of total water demand. Small-scale irrigation projects in this zone are estimated in the thousands and most of them are pumping water from the rivers coming off the mountain without having the necessary water permits. There are two consequences: since most pumping is taking place outside of the approved regulatory framework, there is little incentive to install meters, and irrigation practices are inefficient with significant amounts of water being wasted.

46. Furthermore, there is an increasing tendency to locate water pipes closer and closer to water sources, so many are now placed in the protected area of the Reserve and a few even reach into the National Park. Abstraction applications are to be approved on the basis of availability or balance of water. However, no account is taken of long term hydrological records to determine the water resource availability. There is a high prevalence of water abstraction without the necessary permits, as well as water abstraction by those who have permits which far exceeds the level authorised, so that dry season river flows have visibly declined and even dried up over the past ten years. Currently, in line with its responsibility for watershed management, KWS are expected to participate in the approval process for new abstraction applications within the National Reserve, yet it has no capacity to assess the long-term impact of approvals on overall water availability coming out of the Reserve.

47. **Poor agricultural practices** such as cultivating steep slopes, over-grazing and intensive cropping without adequate inputs have resulted in declining soil fertility. Loss of topsoil through erosion compounds the problem, and leads to high silt loads in water courses and degradation of ecosystem services such as water catchment capacity, nutrient cycling and carbon sequestration. Crop intensification combined with the incapacity of farmers to provide inputs, such as organic matter to replenish nutrients and erosion control structures, causes further degradation in soil condition and landscape processes.

48. **Illegal activities** in the National Reserve such as logging of native trees and poaching have lead to a local decrease in wildlife populations. Heavy poaching of important timber trees has greatly reduced populations and regenerative capacity of such tree species. Some of the most targeted tree species are Cedar (*Juniperus procera*), Wild Olive (*Olea europea*), East African Rosewood (*Hagenia abyssinica*) and Camphor (*Ocotea usambarensis)* Camphor tree populations have declined to a level where it is now a locally threatened species. Illegal clearing of forests for agriculture and charcoal burning, have reduced vegetation cover and left bare ground vulnerable to erosion and weed invasion. Human encroachment into forest areas has reduced vegetation cover and wildlife habitat. Degraded

indigenous forest area currently covers about 4 800 ha. Wildlife poaching remains a threat to the unique biodiversity of Mount Kenya, and rare and commercially valuable species are particularly vulnerable. Buffalo, for example, are commonly hunted for their meat which is sold locally below the price of beef, mutton or goat meat.

49. **Breakdown of the shamba system.** Non-Resident Farming System or 'shamba system' is a form of agroforestry whereby farmers cultivate short rotation foods crops on gazetted forest land (such as the Reserve) for three or four years while they tend inter-cropped tree seedlings. Once the trees have grown sufficiently to shadow the agricultural crops the farmer is supposed to move off the allocated plot and is eligible for another cleared forest plot. Since the early 1980's the scheme has been mismanaged and by 1999 75% of areas under the shamba system had not been replanted. Farmers took up residence on their shambas and expanded their farms illegally, exploited forest areas by burning wood for charcoal and snaring wildlife to sell as bush meat. The shamba system has been discontinued by the Government of Kenya on 31 March 2004.

50. **Repeated fire occurrences** have altered structural and species diversity and encouraged establishment of invasive species. Fires have degraded large areas of both plantation and indigenous forest areas, particularly on the drier western side slopes of the mountain. The fire-prone areas of Mount Kenya stretch in an arc across the north side of the ecosystem from Gathiuru on the west to Meru in the east. Most fires are deliberately lit, reportedly started by honey hunters, arsonists or from land preparation activities within and outside forest areas. Some fires have occasionally spread to areas difficult to access such as the moorland in the high altitudes where they smoulder for days and are difficult to extinguish.

51. **Human/wildlife conflict.** The close proximity of the human settlements to Mount Kenya National Forest Reserve results in continuous human/wildlife conflicts in surrounding farmlands. Animals raid croplands, causing loss of production, damage to infrastructure, and injury or death to people and even the animals themselves. Elephants cause the most damage although the buffalo, primates and wild pigs also contribute to crop damage. Elephants and buffaloes destroy plantation trees though debarking, uprooting, horning and trampling. Human settlement has gradually encroached on traditional elephant migration routes and so their movement is now restricted along narrow corridors. Fencing of individual farms can provide protection, but its limited scope and haphazard adoption can transfer the problem to the non-fenced farms and confuse the animals.

Ongoing Conservation Activities

Government Responses to Threats to Mount Kenya

52. In 1999 Kenya Wildlife Service carried out surveys of both the Mount Kenya National Park and Forest Reserve. Field surveys and time series analysis of satellite imagery found serious degradation and showed that most of the areas clear-felled in 1987 and 1995 had not been replanted and there was clear evidence of illegal timber harvesting and marijuana cultivation so that the extent of degradation was increasing. Following publication of the report, GOK implemented a number of strong actions in July 2000 to address these serious problems.

- The management of the Forest Reserve was transferred from the Forest Department to the Kenya Wildlife Service, and the area was officially gazetted as a National Reserve;
- Logging in forest plantations was banned nationwide, including in the Mount Kenya Reserve; and
- A plantation forestry replanting programme was initiated immediately.

53. A follow-up survey carried out in February 2003 in the Mount Kenya National Park and Reserve by the UNESCO World Heritage Committee found that the area subject to degradation had not increased since 1999 and there was a nineteen-fold increase in the area reforested and some natural regeneration was taking place in indigenous forests. The positive change can be attributed to a decline in illegal timber extraction, the plantation replanting programme by the Forest Department, assisted by local community groups, and increased enforcement of Non-Resident Farming-system regulations. The new Government reviewed the 'shamba' system in 2003 and concluded that it had been mismanaged and that there were no resources available to improve it. The Government subsequently implemented its fourth major action on March 31, 2004 of banning the shamba system nationwide, which is also implemented in the Mount Kenya Reserve.

54. **Management Plan for the Mount Kenya Ecosystem 2002-2007[5].** The transfer of management of the National Reserve to KWS quadrupled the geographical area (from 700 km^2 to 2 700 km^2) under its management, without a corresponding increase in resources to cover the expanded area. In order to begin to develop solutions for the long term management of the expanded protected area, KWS has prepared a draft Management Plan for the Mount Kenya Ecosystem 2002-2007 with assistance from UNESCO. The draft Mount Kenya Management Plan has provided a comprehensive assessment of the forest rehabilitation activities required, biodiversity conservation, the potential for development of tourism, wildlife conservation, protection for local communities, research and monitoring activities and the staff resources required. The draft Management Plan has been a central document for the design of the GEF Alternative and it is expected to be formally approved in 2005.

Ongoing Government Activities in the Area

55. Development activities are coordinated and implemented at the District level in Kenya[6]. Each Ministry has technical officers for carrying out a number of different types of activities. Thus, the District Water Officer, the District Agricultural Officer, the District Livestock Officer, District Forest Officer, among others, are responsible for working with local communities in their area of expertise. A number of mechanisms (such as the District Development Committee) and procedures (District planning, budgeting and implementation process) have been put in place to ensure coordination across sectors. The ongoing economic reform process and recently passed legislation clearly expands the responsibilities that local communities are expected to assume, and District technical services will be expected to play an increasing role in supporting them. Under the baseline, the current level of service provision by the Government in the agricultural areas is expected to continue.

56. **Forest Department** is currently organised to coincide with administrative areas of the country namely provinces, districts, and divisions. In Mount Kenya area, FD operates from 18 forest stations in the National Reserve (covering about 18 000 ha out of the total of 200 000 ha) in the five administrative districts namely Embu, Kirinyaga, Nyeri, Meru Central and Meru South. The funds for its operations are provided for in the national budget and mainly cover recurrent expenditure, with development work funded externally from donors. The department is also providing forest extension in areas outside gazetted forest areas to ease pressure on forest wood products. These latter activities constitute the main focus day-to-day operations of the department.

57. **The Kenya Tea Zones and Conservation Corporation** is involved in establishment of continuous rings of tea and fuelwood buffer belts around the gazetted forests. To date, the Corporation has established 1 300 ha of tea and planted 800 ha with assortment of trees mainly fuelwood trees to cater for tea factories and domestic use in degraded forest fringes in the eastern slopes of Mount Kenya.

[5] See Annex 6 Mount Kenya Management Plan.
[6] The District Focus for Rural Development (DFRD) was adopted as national policy in 1984.

58. **Kenya Forestry Research Institute** (KEFRI) is carrying out forestry research under four main programmes: indigenous forests, plantation forestry, dryland forestry, and farm forestry. The institute has been undertaking various research programmes in Mount Kenya targeting indigenous forests using Government financial resources. Recent research work has begun to focus on the benefits of carbon sequestration as a result of forest rehabilitation and development.

59. **Kenya Wildlife Service**. KWS has taken over responsibility for the management of the National Park and Reserve, and continues to work with surrounding local communities for conservation activities and problem animal control. The operations of KWS in Mount Kenya area include: (a) the administration of the National Park and Forest Reserve under four units (community wildlife service, security, park rescue and administration) and (b) Community wildlife and Conservation activities by District Warden Offices of Embu and Meru which are established outside of the reserve. The District Warden's Office Embu covers Kirinyaga and Embu districts and, part of the Nyeri District while the Warden's Office in Meru covers Meru Central and Meru North districts. The on-going activities (on a day to day basis) within the District Warden Office include, (a) protection of local communities from wildlife menace in form of destruction of property, crops, infrastructure etc and (b) community conservation programmes (c) problem animal control, and (d) wildlife protection (anti-poaching). These activities are funded from the central government as part of recurrent expenditure. Because of the continuous and immediate threat of wildlife to the livelihoods of communities in the areas surrounding the National Reserve, KWS has only been able to undertake limited activities for the long term planning, management and monitoring of wildlife and biodiversity in the protected areas. Staff constraints, as a result of the continuous demands for control of the movement of wildlife outside the protected area, have limited the capacity of KWS to engage in community conservation programmes and rehabilitation of indigenous forests. The preponderant share of KWS activities are financed by GOK.

Donor-financed and Other Activities[7]

60. There are a number of environmental conservation initiatives being undertaken in Mount Kenya by various funding agencies and the public sector. These agencies have in past operated independently with limited effectiveness. Since 2001, efforts have been made to bring the donors together to harmonise their activities for improved impact through the Mount Kenya Donor/Partner Cluster Forum. The forum is funded as a project under Community Management of Protected Areas Conservation (COMPACT), GEF Small Grants Programme (GEF/SGP) and seeks to provide a platform to foster collaboration and cooperation among agencies and partners involved in conservation of Mount Kenya Ecosystem. Its mission is "to enhance biodiversity conservation, harmonise natural resource management and optimise resource use in the Mount Kenya ecosystem through sustainable forest and wildlife management, tourism development, biodiversity conservation, agro-forestry, education, research, information sharing, community participation, capacity building and policy and legislative development". Membership is varied and includes UN agencies (UNDP, IFAD, UNEP, UNESCO), bilateral donors (USAID, EU, DFID, etc.) the World Bank, the public sector institutions (Kenya Wildlife Service and Forest Department), NGOs/foundations (Kenya Forestry Working Group, Mount Kenya Bill Woodley Trust, William Holden Wildlife Foundation,) as well as private sector operators (Serena Hotels, Alliance Hotels, Kenya Airways, etc.).

61. The public sector with assistance of external funds has adopted the same approach in carrying out its mandate in the area. Under the auspices USAID-funded Forest/Range Rehabilitation and Environmental Management Strengthening programme, a technical task-force for Mount Kenya ecosystem management grouping all relevant stakeholders from Forest Department and Kenya Wildlife Service has been established to coordinate their operations in the area through monthly meetings. The members of the Task force are drawn from FD; Provincial Forest Officers, District

[7] See Annex 7 for a discussion of on-going donor financed activities.

Forest Officers KWS wardens, District Water Officers in the districts surrounding Mount Kenya; NEMA is represented by District Environment Coordination Officer.

62. While each funding agency involved in conservation work in Mount Kenya has operated independently, when these interventions are viewed in their totality, they seek to address both driving forces and impacts of the environmental degradation in the Mount Ecosystem and its environs. The activities which seek to address the causes of environmental degradation are mainly but not exclusively in the agricultural areas while those addressing the impact such as deforestation target mainly, but not exclusively the Forest Reserve.

Management of Human/Wildlife Conflict

63. The principal task for KWS in the project area is human/wildlife conflict mitigation, which absorbs about 70% of its financial and staff resources. There are four methods used by KWS to protect forest adjacent communities against wildlife menace (mainly the elephant and to a lesser degree the buffaloes): (a) drive the animals back into the protected areas by scaring them, (b) establishment of wildlife barriers, (c) wildlife translocation and (d) problem animal control, with elimination by shooting. The last option is used when individual animals persistently invade farmland harming people or their livelihoods. Wildlife incursions cause crop damage, with most damage caused by elephants, though buffalo and pesky primate behaviour are also problematic. The continuous incursion of wildlife into the farmlands provokes hostile attitudes by the local communities, and undermines traditional attitudes of tolerance and co-existence with animals.

64. The establishment of short and medium length wildlife barriers has become an on-going effort by KWS along specific lengths of the boundary between the protected area and neighbouring lands over the past four years. Some barriers have been established by communities, and some have been funded by donors. In the south and south west slopes, 40 km moat was built by the community with technical support from KWS, but maintenance is labour-intensive and communities are not able to combine its maintenance with their daily livelihood chores, so it does not provide effective protection from elephants. A number of short sections of electric fence totalling about 80 kms have been established, but in the absence of a comprehensive solution, this can transfer the problem.

65. There has been a great deal of learning about what works and what does not work over the past fifteen years in Kenya. One lesson has been about the need to determine with communities the type of wildlife barriers and their characteristics (for example, the frequency of access gates to forest areas if fences are erected), and to ensure the clear assumption of maintenance responsibility by the communities. Another lesson has been about how elephants react to fencing: an elephant will move along the length of a fence until it finds an exit; if such an exit is not found, it will break through even the most impressive fence. There are four *de facto* elephant corridors coming off from the Mount Kenya National Reserve, and even though these corridors are being increasingly narrowed, elephants will stick to them if they go some place. So another lesson is that elephants will adapt their behaviour for co-existence with people, if appropriate mechanisms are put in place to protect their need for seasonal migration for reproductive purposes and to maintain their genetic diversity. Thus, while fencing has been effective in significantly reducing human/wildlife conflict, there is a need to provide for the integrity of elephant migratory corridors.

66. Other methods to protect farmlands from elephants have been tried in the project areas, such as use of chillies as a buffer zone between the elephant habitat and farmlands. This method is adequate in dry sub-humid areas, where human population and animal densities are much lower, as the animals simply move elsewhere. This method is not effective in the Mount Kenya area, because of the high human population density, and the animals trample the chillies and invade the farms. Because of the small farm size, farmers are reluctant to devote areas to chilly growing, and the minor protection which is obtained is only seasonally. Experience has shown that alternative more permanent options are required.

Description of the Baseline Situation

67. The current situation of the agricultural areas and National Park and Reserve together is that of an ecosystem which has evolved in a state of co-existence to accommodate the requirements of the protected areas and their wildlife within the context of human needs. The National Park and Reserve are *de facto* bounded and isolated by the surrounding population, except for the four corridors allowing for the seasonal migration of elephants to the Northern Grazing Areas and the Aberdares (Isiolo and Marasbit) for breeding and feeding. In the agricultural areas, inappropriate practices are leading to erosion and declining soil fertility, while there is an increasing demand for water for agricultural purposes as production is intensified. The threat posed by wildlife to livelihood activities is increasingly undermining traditional tolerant conservation attitudes of local communities, while poverty drives many of the anthropogenic threats to the National Park and Reserve.

68. **Government Action**. The Government of Kenya has clearly shown its commitment to addressing the inter-related problems of destruction of the protected areas and environmental conservation as a key to sustainable poverty alleviation. While recent legislation and policies encompass environmental issues and foresee a changed approach for development in agricultural areas, there will be limited "trickle down" in terms of changed field approaches by District technical services. In the agricultural areas surrounding the mountain, District technical services will continue to support a number of poverty alleviation activities, including the IFAD-financed Central Kenya Dry Areas Project noted above, but there will be limited emphasis on better management of land and water resources along ecological boundaries. With regard to the protected areas, in July 2000, GOK has transferred management of the National Reserve KWS in KWS, banning logging and supported plantation reforestation, and in March 2004, the shamba system has been banned. While these actions represent significant commitment to conservation of the National Park and Reserve, the implementation of supporting activities will be very slow because of financial resource constraints, so the current trends may overwhelm the actions taken.

69. **Limited Land Management in Agricultural Areas**. The area around Mount Kenya is densely populated and intensely cultivated to provide food for the population and for cash crop farming. Tea is by far the most important income earner for communities but it is restricted in the south and south east. These areas are relatively stable in terms of regular income and consistent farming practices. Coffee growing areas were once characterised by well maintained bench terraces. However, with the collapse of global coffee prices, coffee farms have been neglected, resulting in extensive soil erosion. For food crops, farming along steep slopes and river frontages without adequate soil protection measures will continue. There has been progressive drainage of wetlands over the years with the reclaimed areas being converted to agricultural use. These practices impact on a range of processes and organisms including: (a) loss in local aquatic and terrestrial biodiversity, and (b) decrease in water quality through increased siltation and eutrophication of wetlands resulting in increased risks to human health. Loss of income from traditional crops, especially coffee, has increased pressure on the forest reserve by human activities as local communities turn to the natural resources of the mountain to supplement their livelihoods; and has led to the breakdown of socio-cultural practices and traditions conducive to conservation. Furthermore, constant menace from wildlife that invades cropped areas does little to promote positive community attitudes towards conservation of natural resources in the protected areas.

70. Under the Baseline, Government technical services operating in the administrative districts outside the protected areas will continue their on-going activities, with slow learning and change for the management of productive resources by ecological zones. Water will continue to be abstracted from rivers with limited concern for efficiency at the local level and overall water management relative to the needs of downstream communities. Support for agricultural production activities will continue, but the current trends of accelerating land degradation can be expected to continue.

71. **Continued Threats to the Protected Areas and Wildlife**. While there continues to be strong commitment to addressing the problems of the protected areas, in the absence of increased external support, the Baseline for the protected areas would include:

- KWS continuing to devote a preponderant share of its time and resources to problem animal control outside of the National Reserve because of the menace for human populations;

- Continuing strong collaboration between individual small donor initiatives and KWS, which will address the human/wildlife conflict problem in a limited and fragmented way through the construction of short barriers in areas with the highest level of conflict with little capacity to address the wildlife management issues in an integrated manner;

- *De facto* migratory corridors will continue to exist, but in the absence of a clear strategy to establish corridors, human needs for security from wildlife menace will not be met, so there will be increasing conflict between people and animals in the *de facto* corridors, and probable increasing loss of elephants in the medium and long term;

- Site specific efforts will be carried out by individual donors and KWS in the buffer zone surrounding the Reserve in order to address immediate livelihood issues for neighbouring communities, with little consideration of the broader development issues relative to the competition for water and the extensive erosion in the agricultural areas which is undermining the catchment function of these areas in the broader ecosystem;

- These site specific activities will continue to provide substantial learning relative to what works and does not work to address the problems of local populations, but their impact will be limited by their local scale and the lack of upscaling;

- Because of the importance of addressing the human/wildlife conflict, KWS will have limited time and resources to devote to the management, conservation and monitoring of biodiversity in the National Park and Reserve.

72. Thus, the Baseline situation is the continuation of the current situation, ie continued efforts by Government to protect the Reserve, but with limited resources to carry out activities. KWS would continue its ongoing work, with its current level of staff, with increasing difficulty to protect humans from wildlife and vice-versa. It can be expected that destruction of the Reserve would continue, though at substantially reduced levels from that observed in 1999. Rehabilitation efforts in the Reserve would be limited and slow. With very slow rehabilitation, there would probably also be continued destruction of some parts of the Reserve, ie those closest to densely populated areas. There would probably be increasing loss of wildlife as result of habitat destruction and continued poaching, probably eventually resulting in the extinction of some species. Pressure from local populations to abstractions water from directly in the National Reserve and in the National Park would continue, with little capacity on the part of District services and KWS to assess the implications of such abstractions. Erosion would continue to be a major problem, undermining the productive capacity of agricultural lands, and leading to reduced ecosystem functions of the entire area and loss of carbon stocks above and below ground.

III. THE ALTERNATIVE COURSE OF ACTION

Justification

73. In order to address the complex and competing needs of the protected and agricultural areas of Mount Kenya, an integrated ecosystem approach has been adopted. Thus, the GEF Alternative aims to relieve the pressures on forest and water resources by focusing on poverty reduction strategies, alternative livelihood options and improved management practices in the forest-adjacent agricultural areas, while at the same time promoting sustainable solutions for the management of the protected areas for the conservation of biodiversity. The project area covers the National Park and Reserve and five administrative districts on the eastern side of the mountain, of which three border the projected area. IFAD and GEF financing have been blended in order to address the inter-related threats. IFAD financing is directed to addressing poverty in the agricultural areas, which is the major driving force behind pressure on the protected areas. Environmental management issues have been mainstreamed, through activities for water management and addressing land degradation which has led to the visible erosion in the sloping agricultural areas surrounding the Reserve. The GEF Alternative is focused on assisting GOK in implementing its 2002 Water Bill, which foresees management along ecological boundaries and sub-basin catchment areas, in contrast to the previous approach which was along administrative boundaries. Ironically, while there has been wide spread adoption of soil and water conservation in sub-humid and semi-arid areas of Kenya, the promotion and adoption of soil and water conservation in the higher potential areas, such as the agricultural areas surrounding Mount Kenya, has been extremely limited. Furthermore, community trusts lands, river banks and wetlands, which are outside of the protected areas, have not been specifically targeted for rehabilitation or the implementation of community based management plans. Within the context of working in the agricultural areas, IFAD financing has been directed to addressing these issues. GEF financing has been directed to supporting measures to improve the management of the protected area, to rehabilitate indigenous and plantation forest areas, and to mitigate human/wildlife conflict.

74. Another important lesson from project implementation has been the need to ensure that institutional and financing arrangements are designed within the existing institutional responsibilities and budgetary procedures of the Government of Kenya. The proposed GEF Alternative aims to promote sustainable land management and the use and management of the protected areas using an integrated ecosystem approach. To ensure institutional clarity and to facilitate timely project implementation, GEF and IFAD financing has been attributed by implementing agency. Thus, IFAD-financed activities in agricultural areas also cover costs that are associated with incremental global benefits through better soil and water conservation on agricultural lands, while GEF financing has been focused on the protected areas. Thus, the entire project is the GEF Alternative.

75. **Country Eligibility and Rationale.** Kenya has ratified the relevant United Nations Conventions on the following dates: (i) the United Nations Convention on Biological Diversity (UNCBD) on 26 July 1994; (ii) the United Nations Framework Convention on Climate Change (UNFCCC) on 30 August 1994; and (iii) the United Nations Convention to Combat Desertification (UNCCD) on 24 June 1997. Kenya has also signed the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on the Conservation of Migratory Species of Wild Animals, the Ramsar Convention on Wetlands of International Importance, and the Vienna Convention on the Protection of the Ozone Layer.

76. In 1995, the Government of Kenya developed the National Biodiversity Strategy and Action Plan which shows its commitment to the Convention on Biological Diversity. The proposed project is consistent with GEF Operational Strategy on biodiversity conservation, specifically with Operational

Programme 12 on Integrated Ecosystem Management and is consistent with Convention of Parties III which promotes cross-sectoral cooperation for natural resource biodiversity conservations, building capacity in local institutions and communities, strengthening the involvement of local people in conservation, environmental awareness, and dissemination of information about sites of global importance.

77. The GEF support is consistent with Article 8 of the Convention on Biological Diversity which seeks to promote conservation through protection and management of protected areas in an area of globally important biodiversity and promotes environmentally sound and sustainable activities in areas adjacent to the protected areas. Analysis of threats to the Mount Kenya ecosystem in general, the National Reserve in particular and the transition zone have shown that integrated approach to ecosystem management is required to address driving forces, threats and impacts.

78. The project will have strong linkages with OP#15 on Sustainable Land Management, which seeks to achieve global environmental benefits within the context of sustainable development, and will therefore contribute to GEF's focal area of land degradation. IFAD funds will be used to address the causes and negative impact of land degradation on Mount Kenya Ecosystem stability, functions, services as well as the local communities' livelihoods and economic well-being. The causes of land degradation has been linked to inappropriate land use especially unsustainable agricultural practices and deforestation as the communities focus on their immediate economic needs to the detriment of the environment. Since the environmental degradation processes occurring in the National Park and Forest Reserve are linked to the situation in the agricultural areas the IFAD funds will address the impact of land degradation in the agricultural areas while GEF funding will be used to address the causes in the protected areas hence the two sources of funding will be synergistic.

79. The project will also have links with OP# 4 on Mountain Ecosystem as it will promote conservation of biological diversity and endemic species as well as in-situ conservation of endangered species on Mt. Kenya. There will also be linkages with OP# 3 on Forest Ecosystems which supports protection of primary/old growth and ecologically mature secondary forest ecosystems by strengthening systems of conservation and sustainable use of the biological resources in the forests ecosystem.

80. **Country Drivenness.** Mount Kenya East Pilot Project for Natural Resources (the GEF Alternative) is a country-driven project based on national priorities and designed to support sustainable development within the context of national programmes such as the PRSP, the Economic Recovery Strategy, the National Biodiversity and Action Plan, as well as national Water and Forest Policies. GOK is committed to the conservation of the National Park and Reserve, as demonstrated by its actions since 2000 (see paras 52-53 above) but has limited resources. GOK priority is to invest in activities aimed at reducing poverty, halting and reversing environmental degradation on agricultural lands, while promoting better water management to ensure the continued availability of water for agriculture. GOK recognises that sustainable poverty alleviation is key for the successful and sustainable implementation of conservation efforts, and is strongly committed to reducing human/wildlife conflict in the project area, and has confirmed its readiness to commit financial resources to increase KWS staff in order to strengthening the long-term management capacity for the National Park and Reserve, in tandem with external financing for training, equipment, infrastructure and logistic improvement.

81. **PDF Block B Outcomes.** The proposed activities have emerged from an extended consultation process and draw heavily on the lessons already learned, while being developed within the national policy, legislative, social and development frameworks. There were extensive consultations throughout the PDF Block B process involving the public sector, the civil society, UNEP, USAID and other donors involved in conservation work in Mount Kenya. The development of activities has involved consultations at national and local levels with a view to identify the issues of concern and define the appropriate activities to address them. At central level in Nairobi consultations

were held with the government and UNEP as key stakeholders, at district level with district-based government staff, staff implementing other donor-funded projects including GEF/SGP-funded projects, NGOs, local leaders and CBOs. Thus, stakeholder views have been carefully taken into consideration during design.

82. **Community Workshops.** As part of the IFAD project preparation process and PDF Block B process, a series of community consultative workshops have been held over the past three years to discuss the problems that communities face as a result of living close to the National Reserve. Not surprisingly, the principal issue was that of wildlife menace; the communities singled out elephants as they destroy crops, property, are a threat to human life and overall negatively impact on their livelihoods. The communities strongly prefer the solution of construction of barriers, and are ready to bear the maintenance responsibilities, both financially and in terms of labour required, with technical backstopping from KWS. The communities further suggested a number of solutions for the control of smaller animals including: joint patrols with KWS, the introduction of control measures for birds in the Timau area, the relocation of certain predatory species to higher altitudes; the designation of animal sanctuary forest areas, especially for monkeys, and protection measures for irrigation infrastructure.

Objectives

83. The development goal of the GEF Alternative, the Mount Kenya East Pilot Project for Natural Resource Management Project, is to contribute to poverty reduction through more productive, equitable and sustainable use of nature resources through integrated ecosystem management. The specific environmental objective for the Mount Kenya Region is to improve conservation, management and sustainable use of biological resources in the protected areas and ensure equitable and sustainable use of natural resources by farmers in the agricultural areas. The intermediate purpose in agricultural areas is to reduce visible and accelerating land degradation processes and to enhance sustainable use of natural resources. The intermediate purpose in the National Park and Reserve is to improve biodiversity conservation and enhance management through the involvement of all stakeholders. These will be achieved through: (a) support for community-based water resource management along ecological boundaries, including areas of the National Park and Forest Reserve, (b) implementing measures to address land degradation on community trust lands and farm plots; (c) improving sustainable on-farm food production and promotion of on- and off-farm income-generating activities together with protection from wildlife menace, (d) measures to build district and community capacity for local governance; and (e) support for project coordination in the agricultural areas and improved management of the National Park and Reserve.[8]

84. The objectives will be achieved though integration of the following outputs:

(b) Improved water regulatory systems and water use efficiency;

(c) Enhanced natural resource management and biodiversity conservation;

(d) Increased sustainability of rural livelihoods systems; and

(e) Strengthened local governance capacity and community empowerment.

[8] See Annex 2 Logical Framework which summarizes development goals, outputs and activities.

Detailed Project Outputs

Output 1: Water Resources Management Improved
(Cost USD 9.82 million, of which GEF financing USD 130 000)

85. **Rationale.** Decreasing dry season streamflow in a number of the rivers emanating from Mount Kenya, water pollution, and landslides have focused government and public attention on the need and urgency for (a) improved water conservation, (b) regulation of water abstraction and (c) improvements in the policy, regulations and capacity of institutions that manage the Mount Kenya water resources. A number of environmental changes have occurred within the watershed area in the form of deforestation, infrastructure development and agricultural activities. These have the potential to negatively impact the hydrological behaviour of the catchment areas reflected in reduced ground water recharge, increased flood flows, decreased dry season flows, and increased sediment load and pollution of the rivers.

86. Notwithstanding the impacts caused by deforestation and land use change within the Mount Kenya National Park and Forest Reserve, the greatest threat to the water resources is currently represented by over-abstraction which has significantly diminished dry season streamflow, particularly on the western and northern slopes of the mountain. Abstraction for irrigation is the principal driving force for over-abstraction. Unreliable rainfall and market advantages gained through irrigated agriculture have spawned numerous large scale and small scale irrigation activities. Lack of capacity within the water regulators and weak operational guidelines and practises have enabled excessive uncontrolled and illegal abstractions.

87. **Activities**. The project will support activities aimed at enhancing water use efficiency through improvement of river basin management, improve river intakes, support water resources data management, improve community-based water resources management and strengthen the capacities of water departments in water resource planning, management and control in line with the Water Act 2002 within agricultural areas. Initial work will entail an assessment of: (a) water management practices; (b) baseline survey on water abstractions; (c) water quality; and (d) water flow rates. The project will further build on the existing River Users Associations (RUAs) and local initiatives, and it will support formation of new RUAs to work in partnership with the district water departments to address specific river basin management challenges such as water apportionment and catchment degradation, and/or resolve water conflicts.

88. GEF-funded activities will strengthen KWS capacity to engage in the approval process for water abstraction and regulation in the National Park and Reserve through the development of: (a) strategy and guidelines for water management; and (b) development of decision support tools for KWS to evaluate river water availability for allocation. With reference to the development of strategy and guidelines for watershed management the key objective is to mainstream the role of KWS in watershed management and strengthen the organization's monitoring system within the area. The approach in the development of the strategy will entail involvement of all stakeholders including the local communities (river users, forest adjacent communities) and regulatory agencies such as FD, KWS, NEMA and WRMA. These outputs will have strong community involvement in their development. The need for development of decision-support tools emanates from the lack of tools to ensure that approved abstractions are consistent with allocation decisions.

Output 2: Environmental Conservation Enhanced (Cost USD 5.94 million, of which GEF financing USD 3.26)

89. This component supports the overall goal of the project; promote sustainable use of natural resources and address land degradation. There are three sub-components: (a) Community Resource Management; (b) Mount Kenya Ecosystem Management; and (c) Rehabilitation of the National Reserve.

90. **Rationale.** Effective conservation management of the unique biodiversity of Mount Kenya Ecosystem largely depends on the conservation of forest ecosystems and associated ecological processes. However, this is seriously constrained by the lack of or inadequate physical and human resources. Whilst ecosystem degradation is due primarily to anthropogenic pressures, it has been exacerbated by failure of regulatory systems and absence of planning mechanisms. Decision makers do not have access to reliable and collated data on which to base informed and proactive management actions and the role of communities has been minimal, hence they have had no real investment in or commitment to its conservation.

91. **Activities.** The project will introduce a combination of measures to promote better management of natural resources by communities in the agricultural areas. The sub-component will focus on the rehabilitation of degraded trust lands, and other publicly owned lands, communal lands, reclaimed wetlands and cultivated river banks, degraded road embankments as well as adoption of energy efficient technologies in charcoal production. The project will empower communities through Water User Associations, community based organizations, women's groups, schools, church organizations and other organizations in the implementation of activities for sustained community natural resource management. Road embankments, which are estimated to contribute to about 20% of the silt load of rivers, will be planted. Benefits to accrue from the activities will include reduced soil erosion and a reduced silt load in river waters. In addition, the project will promote increased forest and tree cover both on-farm and on communal or government land (trust lands) as part of natural resource management activities.

92. GEF-funded activities will focus on strengthening the capacity of KWS for effective ecosystem management within the National Park and Reserve. Support will be provided to: (a) rehabilitate forest degraded areas; (b) rehabilitate access roads and bridges; (c) promotion of participatory community forest management and support for the preparation of strategic management plans for selected forests; (d) preparation of forest-specific operational management plans; (e) upgrading and/or development of facilities and systems to undertake, research, monitoring and information management for the protected area; (f) improve fire-fighting capacity; and (g) develop a tourism management plan for National Reserve.

93. **Forest Rehabilitation and Management.** The activities undertaken in forest rehabilitation and management are designed to improve the ecological condition, protection and sustainable management of Mount Kenya's forests. Two activities will be implemented: (a) rehabilitation of degraded forest areas; and (b) protection of forests.

- Rehabilitation of degraded forest areas will entail replanting of a total of 2 780 ha of degraded forests (1 950 ha of indigenous forest and 830 ha of indigenous/exotic plantation forests) with a mix of fast-growing indigenous and acceptable exotic species in strategic areas to contribute to the conservation and protection of neighbouring natural ecosystems by: (a) supplying communities with wood products for fuel, construction and other uses and thereby reducing pressure on indigenous forest wood products; and (b) providing a source of alternative income for forest-adjacent communities who provide labour for managing plantations (e.g. thinning and pruning). Forest-adjacent communities will play a central role in forest rehabilitation, based on the successful approaches developed under other projects operating in the area.

Communities will be involved in growing seedlings, planting out and ongoing post-planting maintenance and monitoring.

- Forest protection from illegal activities and the spread of fire will be improved. GEF funds will assist to equip KWS and FD to effectively regulate use of forest resources, to provide improved protection from illegal activities and to control the spread of wildfire. The project will finance improvement of existing infrastructure and provision of essential equipment for better fire management in fire-prone areas which cover the Gathiuru, Nanyuki, Ontulili, Marania, Mucheene and Meru fire belt. The project will fund the construction of five forest fire towers and provide essential fire fighting equipment for the six stations covering areas within the National Park and National Reserve.

94. **Ecosystem Management.** GEF will finance a number of activities to empower communities in NRM and strengthen the management capacity of KWS and FD in the management of indigenous and plantation forests. These activities are: (a) participatory forest management; and (b) preparation of forest-specific operational management plans. Pilot participatory forest management plans will be developed for Hombe and Irangi Forests in a partnership between the respective communities, KWS, FD, KEFRI and other stakeholders. It is envisaged that the process for the development of the Participatory Management Plans will take about two years. GEF funds will be utilized to build on the activities already being undertaken by the communities in forest management which includes bee keeping and forest enrichment planting. Key benefits to accrue from this activity will include direct tangible benefits to participating communities through equitable access to resources and increased protection of biodiversity through community commitment to conservation and sustainable use of forest resources.

95. Operational management plans will be developed jointly by KWS and FD for selected forest stations to facilitate effective planning, budgeting, and monitoring of activities related to forest management. GEF-funded support will be in the form of technical assistance for plan development and will collaborate with and compliment the work of FORREMS (Forest/Range Rehabilitation and Environmental Management Strengthening) project, which is assisting KWS and FD to develop area-specific fire management plans for the six fire prone areas listed above. Lessons learned from the development and implementation of these operational plans can then be transferred to developing operational plans for the remaining 12 forest stations.

96. This activity directly addresses the issue of forest degradation (an impact) within the National Reserve, and the tasks involved also address the root causes of degradation – poverty and inadequate institutional capacity to enforce existing regulations and to enact enabling policy.

- **Enhanced KWS Capacity.** The activities planned will address: (a) staff shortage in the Park; (b) the need to strengthened KWS staff skills for community mobilisation; and (c) poor physical infrastructure. Following recruitment by KWS of 48 additional rangers, the project will support their basic training, training in participatory community methodologies, the purchase of uniforms, patrol equipment and other materials. The recruitment of this staff early in the project period will enable KWS to better control the movement of animals and to work with local communities in the management of the wildlife conflicts in the short term, while seeking to identify and reach concensus for long term solutions. To improve infrastructure, provisions will be made to rehabilitate ranger outposts in the project area, and construct ranger barracks and dog kennels in the National Park.

- **Wildlife protected from poaching and enhanced management of problematic animals.** Provisions will be made to bolster the capacity of KWS to patrol the Forest Reserve in order to reduce the incidence of poaching and to drive animals back into the forest when they invade farmlands.

- **Improved communications and facilities for enhanced National Reserve management.** It is planned that provisions will also be made to provide electricity to the park headquarters and at Sirimon Gate and to improve communications by upgrading the radio communication system. Provisions will also be made to strengthen the Mountain Rescue Unit at the park headquarters.

- **Adaptive ecological monitoring and information management system for Mount Kenya is developed and implemented.** KWS currently has limited infrastructure and equipment to collect and analyse reliable and scientifically valid information for the Mount Kenya protected area. Such information is required to be able to undertake long term ecological research and impact assessment. The lack of a monitoring and information system hampers day to day ecosystem management and makes it difficult to prioritise conservation tasks and to develop proactive management strategies for specific sub-ecosystems. It also limits the ability of the GOK to accurately report on Kenya's biodiversity status in the context of the National Biodiversity Strategy and Action Plan as per its commitment to the Convention on Biological Diversity. KWS in Mount Kenya also lacks a central repository for publications of past and ongoing research conducted in the area, and an effective information dissemination system.

- KWS has an established research station in Nyeri, the Mweiga Research Station. Mweiga scientists have the technical skills to conduct a wide range of environmental activities. However, the Station's ability to carry out these activities is seriously constrained. Provisions have been made to strengthen Mweiga Research Station to carry out activities aimed at long term ecosystem monitoring and management, using existing data sets and filling knowledge gaps where required and possible. A research outpost will also be established at the National Park to be used by visiting scientists. The strategic location of this research facility will ensure that KWS is involved in ecosystem studies conducted by national and international research organisations and that such information is readily available for day to day ecosystem management.

Output 3: Sustainable Rural Livelihoods Increased
(Cost USD 5.99 million, of which GEF financing USD 1.3 million)

97. **Rationale.** The livelihoods of farmers in the project area are vulnerable, and agricultural activities are subject to increasing constraints from a variety of causes, including declining soil fertility and erosion. Wildlife, even at some distance from the National Reserve, are a menace to people and crops, as well as on-farm investments, such as crop storage facilities and irrigation infrastructure. The long-term maintenance of the biodiversity of the fauna in Mount Kenya is partly dependent on harmonious co-existence between the animals and the neighbouring communities. Past experience has shown that in all cases where there has been unresolved conflict between humans and wildlife, wildlife has lost. The approach of the proposed GEF Alternative is two pronged: (a) to address the livelihood issues at the farm level through a combination of measures to improve agricultural production and soil and water conservation; and (b) to reduce the menace from wildlife.

98. **Activities.** Three activities will be funded in agricultural areas (a) on-farm soil and water conservation in which farmers will be assisted to increase productivity through improved inputs and training in agro-forestry, crop technology and soil fertility management. Farmer Field Schools will train farmers in conservation agriculture techniques to reduce soil and water degradation. Government and other agencies will also benefit from training in participatory approaches so that they can assist farmers with improved technology and conservation approaches, (b) off-farm, income generating activities for which the project will work through community groups to provide training in bee-keeping, processing of agricultural products, promote sustainable preventive and curative systems for livestock and livestock breed improvement; and (c) while the project's primary focus is on environmental conservation, a number of specific activities will be geared towards supporting marketing linkages. This will involve mobilising communities, facilitating links between marketing

groups and credit institutions, disseminating market information, and rehabilitation of selected access roads to facilitate transportation of agricultural products to markets.

99. GEF supported activities are aimed at protecting local communities from wildlife menace especially elephants and buffaloes resident in the mountain and elephants migrating from the mountain. Three activities will be funded: (a) establishment of wildlife barriers in response to the needs and capacity of local communities to maintain them; (b) preparation of a long term strategy to address human/wildlife conflicts along wildlife corridors; and (c) a Tourism Development Plan for the National Park and Reserve.

100. **Enhanced local community capacity for human/wildlife conflict.** This is designed to increase the involvement of local communities in the human/wildlife conflict resolution activities. This will be achieved through training the communities in participatory methodologies and promoting cross-community learning (with communities in other areas where human/wildlife conflicts are prevalent and are active in their mitigation) in order to promote horizontal information transfer to harness local knowledge on basis of commitment of the communities to establishment and maintenance of wildlife barriers. KWS and contracted NGOs will be facilitators in the implementation of this activity.

101. **Minimising Wildlife Incursions into Agricultural Areas.** The problem of ensuring co-existence of people and animals in high population areas is a challenge. There is a need to provide security to people so that they know that wildlife does not present a threat to their livelihood activities, and such measures can also reduce the threats that people cause to wildlife. Wildlife barriers are increasingly being seen as a solution to the problem in the Mount Kenya region (para. 88 above) because other methods have had only limited impact. The approach for selecting and installing different types of wildlife barriers has evolved significantly over the past ten years, in light of the experience gained by local communities, KWS and NGOs. The type of wildlife barrier selected depends of the type of wildlife incursion, as well as the geographical/topographical characteristics of the specific area. Furthermore, barriers are only successful and sustainable when they are demanded and installed by local communities, with full commitment to and understanding of their maintenance requirements. Installation of wildlife barriers are expected to resolve human/wildlife conflicts by significantly reducing threat to human life and damage to crops and other property by elephants. It will also enable the animals to enjoy a high level of local acceptance and provide greater security from human impacts for long-term biodiversity conservation of the fauna.

102. The project will thus support capital investments of the wildlife barriers with due consideration given to retaining ecological corridors for the fauna in the ecosystem. The project will support the installation of wildlife barriers in specific areas identified and prioritised by local communities working in close collaboration with the KWS. There are specific areas where the prevalence of human/wildlife conflicts are high and these are commonly referred to as the hotspots. In the Northern Slopes of Mt Kenya, there are approximately nine ‘hotspots’, in the Meru Central and Meru North districts, and in, the Karatina-Embu area in the south.

103. The situation as it is now, animals in the park (excluding elephants) are confined by the high human population around the park, thus the establishment of the barriers will formalise the *status quo*. Indeed, the establishment of barriers acts as a deterrent for communities to enter the reserve for illegal activities such as poaching. Thus the establishment of the barriers in conjunction with the various conservation activities proposed under the project will contribute to conservation of the fauna. With reference to elephants the situation is different as the establishment of the barriers will exclude migratory corridors to ensure these animals migrate to the Isiolo, Samburu and Meru National Park (Northern Grazing Zones), Aberdares and Ngare Ndare Forests. These actions should safeguard against genetic erosion of the fauna of Mt. Kenya Ecosystem.

104. **A strategy to minimise human/wildlife conflicts along migratory corridors.** While funding of the migratory corridors are not part of this project proposal, GEF financing will cover the preparation of strategy for developing four wildlife migratory corridors linking Mount Kenya with: (i) the Aberdare Ranges (about 50 km in length); (ii) Ngare Ndare Forest Reserve (9 km); (iii) Upper Imenti Forest (4 km); and the corridor linking Lower Imenti Forests with Northern Grazing Zones which is about 35 km away. The latter corridor is the priority. The development of the strategy will borrow from other experiences in Kenya especially, the GEF-sponsored Wildlife Conservation Lease project of Nairobi National Park Ecosystem as Nairobi National Park shares similar social problems, poverty and high population with Mt. Kenya. This project and others will be analysed while developing the strategy with a view to identify the most practical strategy suited for Mt. Kenya. The strategic plan to be developed will identify the land requirement of the corridors, while also taking into account the land constraints of the concerned communities. Once developed, alternative funding will be sought to implement the strategy.

105. **Eco-Tourism Development.** In order to diversify the incomes of local communities and increase the revenue base for NP, for long-term sustainability of the activities initiated through the supplementary funds, provisions will be made to develop eco-tourism in the National Park and Forest Reserve in close collaboration with local communities.

Output 4: Community Empowerment Achieved
(Cost USD 1.76 million, no GEF financing)

106. **Rationale.** Recently passed legislation (Environmental Act 1999, Water Bill 2002 and pending Forest Bill 2004) articulates an approach for decentralising responsibility to local level authorities and communities for natural resource management. The challenge now faced is how to develop local level governance capacity, and define roles and responsibilities. While District technical services may have some knowledge of the new policies, there is a need for substantial work to put in place local decision and management capacity, as well as changing the approach for working with local populations. There are many community-based organisations (CBOs) and self-help groups in the project area, however, most do not have clear objectives and many lack resources to carry out their activities. Communities require skills and support to develop sustainable solutions to inherent and cyclic poverty. Farmers are among the very poor and the dependence of women on subsistence farming contributes to their vulnerability to external impacts such as drought, and their unequal access to social and economic assets. Strengthening these groups will be an important first step in giving communities the responsibility of managing their natural resources.

107. The component is designed to empower local communities to take charge of their development. The component has two targets local communities and the public sector staff. The component objectives will be achieved through: (i) strengthening the capacity of community based organisations; and (ii) strengthening the capacity of district technical staff for service delivery. Accordingly, the component would comprise two sub-components; Community Development, and (b) Strengthening District Technical Capacity.

108. The activities to be implemented foresee: (a) formation of Focal Development Area Committees in selected Focal Development Areas of the river catchments; (b) formation of River User Groups and Water User Associations on river catchments where they do not exist; (c) strengthening the newly formed as well as the existing community based organisations, especially those within the Focal Development Areas through focused training in group dynamics, proposal writing, project cycle management, bookkeeping and relevant technical skills; and (d) support implementation of innovative community initiatives in agriculture, marketing and micro processing of natural resource products and by-products. Activities under this sub-component are designed to equip communities with the requisite knowledge, skills and exposure that would enable them to take charge of their own development. Given that women form the majority of the rural population and provide

the main labour for productive activities in the project area, bottlenecks that limit their effective contribution in local development will be addressed.

109. Training will be provided to enable communities to identify and prioritise their needs, to design solutions to these needs and to be a part of the implementation process. The project would seek to work with local groups where these are available or would facilitate group formation where no appropriate established groups exist. Ultimately, by fully involving the groups in the project process, it is intended to strengthen and empower such groups both to be able to sustain the project interventions and to be the engines for further development activities. Hence capacity building for CBOs and individuals would be a major feature of all components of the project. This approach is consistent with the intentions expressed in the new Water and Forestry Bills, which call for communities to be more involved in the management of the natural resources on which their livelihoods depend.

110. **Strengthening District Technical Capacity** of the implementing agencies will be enhanced through tailor made courses in project cycle management, participatory tools for community development, community mobilisation and organisation, gender and social differentiation, development and assessment of community project proposals, preparation of annual work plans based on community formulated action plans and participatory monitoring and evaluation. Skills up-grading is central in re-orienting the existing "top-down" approaches of Government staff in general, and to promote a culture of good governance practices among government technical service providers, local communities and other stakeholders.

111. While no activities have been budgeted to be funded by GEF under this component, the activities funded by IFAD will form the basis of need assessment, planning and implementation of the activities to be funded under GEF, specifically support for local communities in NRM including implementation of participatory forest management programme, human/wildlife conflict resolution, water resource management in the National park and Forest Reserve. The implementation of these activities will be used to assess the effectiveness of the IFAD-funded activities under the component. The GEF-funded activities will thus be used to internalise the local community planning and implementation process funded by IFAD.

Output 5: Timely Implementation of Planned Activities
(Cost USD 3.09 million, of which GEF financing USD 0.31 million)

112. **IFAD-funded activities.** These activities will be implemented through sector ministries as per the mandate of each. For project activity planning and coordination, a Project Management Unit (PMU) staffed by a multidisciplinary team will work with GOK technical staff in the five districts in order to build local governance capacity and develop modalities for working with local communities. PMU will be staffed by a Project Manager, Project Accountant, Water Resources Expert Engineer, Agricultural Officer, Natural Resources Management Officer, Management Information Systems Officer, Socio-economist, Community Development Officer and a Project Liaison Officer. The implementation responsibilities of the various technical services are laid out below (paras 131-133), while detailed organisation and management arrangements have been agreed upon with GOK during loan negotiations held in Rome on 26-27 November 2002, and are contained in the Loan Agreement signed on 17 March 2003. Competitive recruitment of project staff has been completed, performance-based contracts have been signed, offices have been provided by GOK and rehabilitated. The Project Management Unit has been established at Embu in July 2004.

113. **GEF-funded activities** will be implemented through existing structures of KWS at local level in the project area, (in line with the organisation's existing responsibilities and procedures for wildlife protection and community conservation activities in protected and non-protected areas), specialised agencies through contractual arrangements, NGOs and CBOs. Activities will be managed by KWS from the National Park headquarters. The technical capacity of KWS to work with local communities

in the buffer area surrounding the Reserve will be strengthened, along with its capacity to manage and patrol the National Park and Reserve.

114. **The technical capacity of KWS will be strengthened** through (a) the training and equipping of an additional 48 rangers[9] (12 at the National Park, 6 for each of the two district warden offices, and 24 for the Reserve); (b) improved communications through the purchase of equipment and relevant accessories; (c) replacement of the existing vehicle fleet of the various units in the park and in district warden offices; (d) the provision of electrical power to the park headquarters and Sirimon Gate; (e) selected improvement facilities in the park headquarters, including the construction of one barrack block and dog kennels, and the rehabilitation of 20 reserve outposts under the Embu and Meru District Wardens and the National Park; and (f) the purchase of equipment for the Mweiga Research Station and the construction of a research outpost at the National Park. Institutional support for improved management and co-ordination includes: (a) project launch for KWS and other implementing agencies, in-country training in monitoring and evaluation activities to familiarise implementing staff with the project objectives, its components, implementation strategy and administrative and management procedures; (b) annual review workshops to assess component implementation progress as the basis for preparing the the work plan for the following fiscal year; and (c) internalise the lessons learned into the Park and Community Wildlife Services activities.

115. **Training of KWS staff and CBOs.** Strengthening the capacity of local communities neighbouring the National Reserve is also foreseen so that they can effectively manage their own natural resources as well as those (such as wildlife barriers) which may be put in place with financing from the project. Following recruitment by KWS of 48 additional rangers, the project will support their basic training, training in participatory community methodologies, the purchase of uniforms, patrol equipment and other materials. The recruitment of this staff early in the project period will enable KWS to better control the movement of animals and to work with local communities in the management of the wildlife conflicts in the short term, while seeking to identify and reach consensus for long term solutions. Support will be provided for on-the-job training for the staff including project cycle management (participatory planning, monitoring and evaluation), implementation modalities, and financial management. Training and study tours will be provided for key project implementing staff and community leaders to other IFAD-funded projects in the country as well as outside the country where similar projects are under implementation. For local communities, tours will be arranged to promote cross-community learning for improved project management. Of key importance will be to promote KWS within the communities surrounding the park as joint custodians of natural resources and sustainable use not deterrent for the use of the resources.

116. **Research**: the role of the research facilities in the short-term will be to monitor and evaluate project implementation progress in line with annual work programmes while in the long-term the station will undertake studies on population dynamics of the fauna, conservation status, habitat quality of the ecosystem and strategies to reduce human/wildlife conflicts. Thus, the research stations will collect and monitor information on the long-term impact of the project, as well as serving as an information centre for other conservation projects operating on Mount Kenya; funding for the design of these activities and the training of staff in the their implementation has been provided. **Water Management**: KWS capacity in the approval process for water abstraction and regulation will be strengthened by developing a strategy and guidelines for water management and decision support tools to be used for the evaluation of river water availability for allocation (see Output 1). **Tourism Development Plan**. This will be developed with a view to improve revenue generation from the National Park and Reserve so that the income can finance an increasing portion of the cost of management and conservation work, with the objective of achieving long-term financial viability and sustainability for the protected area, with a minimum need for allocation of central GOK budgetary resources.

[9] KWS has agreed to finance the salaries of the recruited staff, which will be incorporated into its annual recurrent budget (Aide-Memoir signed with IFAD May 2004), while the project will cover the cost of their training and equipping.

IV. RISKS AND SUSTAINABILITY

Internal Risks

117. **Project implementation.** There is a risk related to the coordination of the timing of field activities with local communities, and ensuring close collaboration between technical services at the community level. development activities are regularly coordinated at the district level, and joint monthly planning with the participation of all concerned technical officers from relevant GOK services are planned. With regard to the integration of monitoring and evaluation activities, short-term specialist assistance will be recruited after start-up to specifically support this effort and make provision for integrated monitoring in key areas.

118. **Financial flows.** There is a risk that financial resources may not be released in a timely coordinated manner by IFAD and GEF. While this is clearly a risk, the past performance of KWS and its status as a recognised parastatal has reduced the risk, its financial performance under other donor financed projects (USAID and World Bank) has been considered satisfactory**.** Financial management issues have been the subject of extended discussions between IFAD and GOK, and substantial changes have been introduced in project financial management systems, which should also overcome this problem.

119. **Institutional Issues.** The challenge for this project is supporting the implementation at the local level of recently passed legislation for better environmental management and the use of natural resources. Such institutional change can take far longer time than that foreseen for the implementation of an individual project such as the proposed project. The participatory preparation process of the project has aimed at building understanding and commitment by institutions, and defining roles and responsibilities. Project activities are been designed to focus on promoting institutional change at the district level, while also building awareness and understanding among local communities, and time lags have been built in to allow for ownership building, but it is difficult to ensure the pace of change.

External risks

120. There are also external risks that are beyond the control of the MKEPP. These risks include climatic factors, such as drought and floods, and the stability of political, legal and institutional regimes. Institutional risks are related to the sustained Government commitment for the implementation of new legislation. The participatory process put in place during the PDF-B has aimed at building consensus early in the project design process and getting clear agreements at the national and local levels about responsibilities. There is a strong commitment by the new Government to better environmental management, and during implementation there will be an on-going discussion process with the concerned government agencies in order to reduce this risk.

Sustainability

121. **Institutional Framework.** The project will be implemented through existing institutional structures within the public sector to oversee and organise project activities and deliver outputs and evaluate impact will also ensure long-term sustainability. There are clearly some activities that will require additional donor assistance, such as the establishment of migratory corridors for elephants, and the GEF funding for the preparation of a strategy for this activity is expected to be catalytic in attracting the required support from other donors and the private sector. In addition, there is commitment on the part of the GOK to continue supporting the activities to be implemented in the post project period through development and recurrent budgetary allocations.

122. **Poverty and Economic Benefits**. In order to reduce threats to the protected areas, the project aims to address the underlying causes related to the poverty of the people living in the agricultural areas. IFAD-financed activities are focused on economic empowerment (agriculture, agro-forestry

and associated livelihood activities), and financial analysis has been carried out on a household basis using five activity models of typical small-scale farms in the area assuming no increase in cultivated areas. Due to the current high environmental degradation and soil losses, without the project, yields are expected to continue to decrease to about 50% of their current levels over the next 20 years. Very conservative assumptions have been used to assess the incremental economic benefits in the '*with* project' situation, which foresees arresting the current rate of degradation and slight yield increases as a result of better on-farm soil management and conservation. The results of the financial analysis under these conservative assumptions show positive incentives to adopt more sustainable agricultural practices, thus contributing to reducing poverty in the project area – and in turn reducing the threats to the protected area.

123. **Protection from Wildlife**. By protecting local communities from wildlife menace, the proposed project will encourage reduce threats to livelihoods and encourage the emergence of a conservation attitude among local people.

124. **Local community involvement.** While participation is not a panacea for ensuring sustainability, the past exclusion of local populations from the management of natural resources has undoubtedly contributed to anthropogenic threats. Learning in Kenya and other countries has shown that greater local community involvement in the management of protected areas can be an important ingredient for their long-term conservation. Thus, there is a greater probability of sustainability if the project is implemented using participatory approaches, meets institutional and local needs and sufficiently raises national and local awareness. All activities under the project use a participatory approach and training of communities and district government agencies is an integral part of project support. Training is expected to build the capacity required to ensure the technical sustainability of project supported initiatives.

125. Active participation by communities is essential for most project activities, particularly soil and water conservation, forest rehabilitation and participatory management, and human/wildlife conflict resolution. These components will generate direct and tangible community benefits which will encourage long term involvement and ownership. Moreover, communities will be supported on a demand and capability basis, that is, those communities who have demonstrated a genuine commitment to sound environmental management and who are collectively motivated and prepared to contribute their own resources. There will be direct benefits for the local communities which will be an incentive for the continued support for the activities initiated during the project implementation in the post-project period

126. **Financial sustainability of Protected Area.** There are a number of activities to be implemented to widen the revenue base of the National Park. The development and implementation of the tourism development plan is aimed at achieving this objective. The establishment of the Research Outpost at the National Park and invitation of scientists who will pay for the use of the facilities will contribute to the sustainability of activities to be implanted under research, monitoring and information management. Additional financial support in the post-project period will come from revenue collected from development of forest and non-forest products following the operationalization of the forest Act and policy, beneficiaries in form of contributions or in-kind for the maintenance of some of the infrastructure and public sector budgetary allocations.

Replicability

127. The project has built-in replication mechanisms. The mid-term review three years after project implementation will review experiences and lessons learned in the five sub-catchments. Based on the review, an additional three sub-catchments will be selected following consultations with local communities and integrated ecosystem management approaches will be replicated in these sub-catchments. It is envisaged that the integrated ecosystem management approach could eventually be

replicated in other regions of Kenya and in other countries with similar agro-ecological characteristics and problems related to protected areas situated within high population density agricultural areas.

128. The outcomes of participatory management of forest, soil management and water resources will be of particular interest because such approaches have enormous potential to improve biodiversity conservation and natural resource management for local, national and global benefits. Experiences gained in farmer-led and participatory initiatives for appropriate conservation and sustainable use practices will be disseminated to local, national and international audiences. At local and national levels, experiences will be promoted by farmer-to-farmer, community-to-community and project-to-project exchange visits. At international level, IFAD and UNEP will ensure that project lessons are used in future project designs of similar nature and will be disseminated through existing channels such as publications, KWS, partners etc.

V. STAKEHOLDERS PARTICIPATION

Partners and Stakeholders.

129. The principal partners are Ministry of Water Resource Development, Ministry of Environment and Natural Resources, Ministry of Tourism and Wildlife, Kenya Wildlife Service, Forest Department, Kenya Forest Research Institute, IFAD as the Executing Agency, UNEP as the GEF Implementing Agency and the civil society, NGOs and CBOs. It will be noted that the project formulation has involved extensive consultations with all the main stakeholders, from policy makers to implementers and local communities. There has been special emphasis on the communities living in the environs of the National Park and Forest Reserve and drawing lessons from ongoing activities. Prior to the project formulation, as part of PDF/B activities, consultative workshops were held in which all stakeholders were involved. In line with the existing field mechanisms for coordination with other donor-financed and government activities, the project will build partnerships to ensure continued ownership of local communities, district forest department staff, KWS, NGOs, KEFRI and other projects. Specifically, the project will draw on past experiences of other donors and specifically the on-going work funded through GEF Small Grants Programme.

Consultation and Collaboration between IAs and EAs,

130. The proposed GEF Alternative has been initiated during discussions between UNEP and IFAD in 2001, and the preparation process has reflected the mandates of each of the institutions. IFAD has taken the lead in the project design process, in close consultation with UNEP. IFAD has benefited from the monitoring work that UNEP has undertaken in the Mount Kenya National Park and Reserve, which has provided a basis for the analysis and the double-focus design of project activities on issues related to the importance of agricultural areas within the overall ecosystem and the impact of human activities on the forests in the National Reserve. The focus of IFAD financed activities on addressing land degradation in the high potential agricultural areas is a result of its emphasis on addressing poverty, while the issue of wildlife menace has repeatedly been placed at the top of the concerns articulated by its target groups. UNEP and IFAD concluded that this proposed project should be submitted under OP#12 for Integrated Ecosystem Management.

131. The Concept Note for the proposed GEF Alternative[10] has been submitted to GEF in 2002, and approved in May 2003. In May 2003, IFAD has also been approved as a GEF Executing Agency for OP#15, Land Degradation. As the project design process was already well advanced and OP #12 had already been identified as the most suitable, it has been decided that the ongoing collaboration arrangements for submission of the project by UNEP would be maintained in order to keep the momentum which had already been achieved.

[10] Financed by IFAD

132. The project is in line with Land Use Management and Soil Conservation Policy of UNEP which emphasizes the programme's role in environmental dimensions of land use management; linkages with land and soil conservation, poverty, land tenure, public participation, environmental impact of agriculture, water management, environmental emergencies, urbanisation, global climate change, trade and environmental externalise. Some of these issues are central to the Mount Kenya East Pilot Project of Natural Resource Management.

133. UNEP has been extensively consulted in the project preparation process. In addition the many stakeholders in the project area have been consulted and their experiences incorporated into the project design. In addition, consultations with UNDP through COMPACT GEF/SGP have been held with specific focus on past, present and immediate future GEF-funded projects with a view to assess the implementation successes as well as bottlenecks and these have been used to identify the project outputs and implementation modalities. UNEP and IFAD will support the implementation of the project

VI. IMPLEMENTATION

134. The project will be implemented by GOK, through its existing institutions in line with their responsibilities. IFAD-funded activities in the agricultural areas will be implemented by the government with Ministry of Water Resource Management Development as the lead agency. Community mobilisation will be implemented by Department of Social Services of the Ministry of Culture, Gender, Social Services and Sports, forest-related activities will be under Forest Department within Ministry of Environment and Natural Resources while livelihoods activities which are principally focused on agriculture will be coordinated by Ministry of Agriculture and Ministry of Livestock Development and Fisheries. GEF-funded activities will be implemented by the Kenya Wildlife Service in the National Park and Forest Reserve, as well as outside the protected areas in line with its existing responsibilities and procedures for wildlife protection and community conservation activities. Implementation responsibilities are presented in Table 2.

135. **National Coordination**. A Project Steering Committee at the national level has been set up for overall policy decisions, approving the Annual Work Plans and Budgets and ensuring that activities undertaken are in accordance with national policies and procedures. The committee members are to ensure that project interventions are coordinated where appropriate with other development programmes and projects. The Project Steering Committee will be chaired by the Permanent Secretary, Ministry of Water Resources Development and be composed of representatives from Ministry of Environment Natural Resources (including NEMA), Ministry of Tourism and Wildlife, Ministry of Agriculture, Ministry of Finance, Ministry of Planning, Department of Social Services, Ministry of Culture Gender and Social Services, Kenya Wildlife Service (KWS), and Provincial Commissioner, Eastern Province. The Project Manager is an ex-officio member of the committee and serves as its secretary.

136. **District Coordination**. Development activities in Kenya are coordinated at district level through the District Development Committee (DDC) chaired by the District Commissioner or his/her appointed officer and the committee comprises all the heads of the departments in the district including water, forestry, agriculture, social services and planning, representatives of KWS, NGOs and CBOs from the project area. For the coordination of activities to be implemented in agricultural areas, a District Project Coordination Committee (DPCC) will be established as a standing committee of the District Development Committee and KWS will be represented.

137. **Coordination of activities in the National Park and Reserve**. The activities to be implemented in the National Reserve will be coordinated by Ecosystem Implementation and Coordination Committee (EICC) chaired by the warden of the National Park, with the participation of the Natural Resources Management Officer from MKEPP as the secretary, the District Wardens

Embu and Meru, Mweiga Research Station, representative from civil society as appropriate, the District Forest Officers from Kirinyaga, Meru Central, Meru South, Nyeri and Embu,and a representative of Chief conservator of forests and the KWS Forest Coordination Unit. The Committee will be responsible for harmonising implementation of activities in the agricultural areas surrounding National Park and Reserve.

Table 2. Implementation Responsibilities

Organization	Activity
GOK/IFAD-Funding	
Ministry of Water Resource Development	Overall implementation responsibilities activities in agricultural areas, convening Project Steering Committee and providing project direction, establishment and funding of PMU, coordination with other ministries and programmes, river level and pollution monitoring, water management planning and arrangements for supervisory and other donor missions. At district level, District Water Officer to prepare AWPB on water data collection and support to water users.-
Ministry of Environment and Natural Resources	Community sensitization to environmental issues; environmental monitoring, at district level, the District Forest Officer, District Environment Coordination Officer will be responsible for preparation of AWPB for community natural resource management and roadside erosion control.
Department of Social Services	Assist with group mobilisation, registration of CBOs and preparation of AWPB for Community Development.
Ministry of Agriculture Ministry of Livestock	Member of Project Steering Committee support for technology development and transfer, District Agricultural Officers responsible for preparation of AWPB for all activities funded under rural livelihoods.
Project Management Unit	Day-to-day organization and management of the project. Identification of participating communities, community training and preparation of Community Action Plans, contractual arrangements with local agencies including NGOs, beneficiary organisations, and the private sector, supervision of contractual arrangements, coordination of activities with supporting organisations including the government, and other development partners working in the project area, project monitoring, evaluation and reporting; arrangements for workshops, preparation of AWPB.
NGOs/Private Sector	Undertake base line survey, contractual aspects of community mobilisation and development planning including group strengthening and undertaking PRAs
CBOs	Assist in the formation of WUGs,WUAs, preparation of CAPs, in conjunction with NGOs, contribution to selected development activities, forest rehabilitation and participatory management, participatory monitoring and evaluation.
GOK/GEF Funding	
Kenya Wild Service	Lead Implementing Agency and to implement Human/Wildlife Conflict Resolution Component, Indigenous Forest rehabilitation and conservation Sub-component of the Forest Resource Management Component, implement specified activities of fire protection in the indigenous forests and moorlands. Mweiga Research Station and National Park Outpost responsible for monitoring protected areas. Prepare AWPB
KEFRI	To take the lead role in the implementation of Participatory Forest Management and collaborate with FD as and when required.
KARI	Field surveys to establish the variability in soil carbon in relation to soil type, land management practices, climate and vegetation attributes.
NGOs	Implement capacity building sub-component as per specific TOR prepared by KWS.
CBOs	Responsible for community mobilisation to ensure erected barriers are maintained.

VII. FINANCING, INCREMENTAL COSTS AND BENEFITS

Financing

138. The total estimated cost of the project, which is considered as incremental, is USD 26.59 million, and the costs by financier are presented below in Table 3.

Table 3. Project Costs by Component and Source of Finance (USD million)

	GEF		IFAD		GoK		Benef		Total	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
A. Water Resource Management										
1. River Basin Management	0.13	3.1	3.83	92.9	0.17	4.1	-	-	4.12	15.5
2. Community Water Development	-	-	4.22	74.1	0.31	5.4	1.17	20.5	5.69	21.4
Subtotal Water Resource Management	**0.13**	**1.3**	**8.05**	**82.0**	**0.47**	**4.8**	**1.17**	**11.9**	**9.82**	**36.9**
B. Environmental Conservation										
1. Community Natural Resource Managem.	-	-	1.66	94.4	0.08	4.8	0.01	0.8	1.76	6.6
2. Ecosystem Conservation and Management										
a. Forest rehabilitation	1.43	72.8	-	-	0.09	4.6	0.44	22.6	1.96	7.4
b. Ecosystem management capacity	1.50	82.0	-	-	0.33	18.0	-	-	1.83	6.9
c. Research, monitoring&information	0.33	83.6	-	-	0.06	16.4	-	-	0.39	1.5
Subtotal Ecosystem Conserv. and Managem.	3.26	77.9	-	-	0.48	11.5	0.44	10.6	4.18	15.7
Subtotal Environmental Conservation	**3.26**	**54.8**	**1.66**	**27.9**	**0.57**	**9.6**	**0.46**	**7.7**	**5.94**	**22.3**
C. Rural Livelihoods										
1. On-farm Soil and Water Conservation	-	-	1.37	73.4	0.09	4.9	0.40	21.7	1.87	7.0
2. Income Generating Activities	-	-	0.67	74.6	0.02	1.8	0.21	23.6	0.89	3.4
3. Marketing	-	-	1.09	64.1	0.14	8.5	0.47	27.5	1.71	6.4
4. Human/Wildlife Conflict Resolution	1.03	67.6	-	-	0.14	9.0	0.36	23.4	1.53	5.7
Subtotal Rural Livelihoods	**1.03**	**17.2**	**3.13**	**52.2**	**0.39**	**6.5**	**1.44**	**24.0**	**5.99**	**22.5**
D. Community Empowerment										
1. Community Development	-	-	1.29	92.4	0.07	4.7	0.04	2.9	1.39	5.2
2. Strengthening District Technical Capacity	-	-	0.35	95.3	0.02	4.7	-	-	0.37	1.4
Subtotal Community Empowerment	**-**	**-**	**1.64**	**93.0**	**0.08**	**4.7**	**0.04**	**2.3**	**1.76**	**6.6**
E. Project Management	**0.31**	**10.2**	**2.27**	**73.6**	**0.50**	**16.2**	**-**	**-**	**3.09**	**11.6**
Total PROJECT COSTS	***4.73***	***17.8***	***16.74***	***63.0***	***2.01***	***7.6***	***3.11***	***11.7***	***26.59***	***100.0***

139. The **GEF** would contribute a total amount of USD 4.7 million (excluding the PDF B funding), equivalent to 17.8% of incremental costs, namely for: (a) the development of tools for watershed development within the protected areas, (b) ecosystem conservation and management (including forest rehabilitation, strengthening of the capacity of stakeholders for ecosystem management and research, monitoring and information management), (c) the reduction of human/wildlife conflicts and (d) some support to KWS for the management of GEF financed activities as well as for the monitoring and evaluation of project impacts on the environment and biodiversity.

140. The balance of the funds needed to meet the estimated incremental costs, equivalent to USD 21.8 million, would come from co-financing by three main sources: IFAD, the Government of Kenya and the beneficiaries. **IFAD** will finance the major share of it by contributing USD 16.7 million (63.0% of incremental costs) for: (a) water resource management both at river basin and community level, (b) support to community natural resource management outside the boundaries of protected areas, (c) improvement of the rural livelihoods of the communities through on-farm soil and water conservation measures, promotion of income generating activities and improvement of marketing of agricultural and forest products, (d) empowerment of local communities through the support to groups and CBOs and the strengthening of district technical capacity and finally (e) setting up a Project Management Unit.

141. The **Government of Kenya** would finance taxes and duties for a total amount of USD 2.0 million (7.6% of incremental costs), with a neutral effect on the public budget. While the cost of existing Government staff in the project area has not been included, the salaries for incremental KWS staff which will be recruited in order to ensure the long term sustainability of the measures put in place in the National Park and Reserve has been included in the Government contribution. The **beneficiaries** would contribute for a total of USD 3.1 million, or 11.7% of incremental costs, mostly as unskilled labour, for: (a) 30% of the costs of small-scale irrigation and domestic water supply development, (b) 50% of the labour needed for maintenance of rehabilitated forests after establishment, (c) 100% of the maintenance of demo plots for on-farm soil and water conservation, (d) 34% of the cost of road rehabilitation and (e) 100% of the labour costs for the building of wildlife barriers (about 8% of total building cost) and 100% of maintenance costs (both unskilled labour and materials).

Incremental Costs

142. The total expected financing of the baseline for the Mount Kenya area over the 7 year implementation period (July 2004-June 2011) is estimated at USD 14.35 million including CKDAP, KWS and FD annual budgets, COMPACT and FORREMS. The details of expected financing by each project/institution are presented in Table 4. As some projects, also cover geographic areas outside Mount Kenya, only a percentage of their committed financing for that period has been considered as part of the baseline for the project.

Table 4. Expected Baseline financing for Mount Kenya Area[11]

	Period	Total financing	Financing 2004 - 2011	% for baseline**	Baseline financing *
CKDAP (IFAD and GoK)	2001-07	18.0	12.6	50%	6.3
KWS Mount Kenya area (GoK)	Annual	0.5	3.5	100%	3.5
FD Mount Kenya area (GoK)	Annual	0.5	3.5	100%	3.5
COMPACT (GEF & UN Found.)***	2004-07	0.9	0.9	50%	0.45
FORREMS (USAID)	2003-06	1.7	1.5	40%	0.6
TOTAL Baseline Financing					**14.35**

Notes: * Over the period July 2004-June 2011
** Also overing other geographic areas so less than 100% considered for baseline.
***GEF funding not included

143. The cost of the baseline (USD 14.35 million) plus the cost of the incremental activities (USD 26.6 million) gives the total GEF Alternative cost of USD 40.95 million. Table 5 below presents a breakdown of the GEF alternative by MKEPP component and source of finance.[12]

Table 5. Total GEF Alternative - Baseline and Incremental Costs (USD million)

	Baseline	Incremental costs (MKEPP)					GEF alternative
		GEF	Co-financing			Total	
			IFAD	GoK	Benef.		
Water resource managem.	2.00	0.13	8.05	0.47	1.17	9.82	11.82
Environmental conserv.	7.90	3.26	1.66	0.57	0.46	5.94	13.84
Rural livelihoods	3.45	1.03	3.13	0.39	1.44	5.99	9.44
Community empowerment	1.00	-	1.64	0.08	0.04	1.76	2.76
Project management	-	0.31	2.27	0.50	-	3.09	3.09

[11] Further details on the baseline cost estimates are provided in Annex 7.
[12] The assumptions for estimating the baseline by activity are provided in Annex 7.

TOTAL	***14.35***	***4.73 (18%)***	***16.74 (63%)***	***2.01 (8%)***	***3.11 (12%)***	***26.59 (100%)***	***40.94***

VIII. MONITORING AND EVALUATION AND LESSONS LEARNED

Monitoring and Evaluation[13]

144. **Project performance.** Internal evaluation will assess progress toward achieving logframe outputs and targets. These evaluations will be carried out by the project PMU and reported annually. Annual financial audits of GEF components will be carried out by UNEP in collaboration with the PMU. Project performance will mainly report on quantitative outcomes while impact monitoring will assess both quantitative and qualitative outcomes.

145. **Impact monitoring and evaluation.** The Mount Kenya East Pilot Project for Natural Resources Management is an integrated ecosystem management project which encompasses both biophysical and human dimensions. Moreover, causes of declining biodiversity, land degradation and poverty often involve a multiple and complex combination of human and environmental factors. Monitoring and evaluation of the MKEPP, therefore, will use an integrated suite of indicators, both biophysical and socio-economic, to assess impacts at local and national levels and the implications for global benefits.

146. Monitoring will be conducted using participatory approaches, particularly at local and district level, involving the implementing partners and beneficiaries. The more technical aspects of measuring carbon sequestration and mapping the diversity of forest ecosystems will require research in order to determine the impacts of project activities on these important dimensions. It is foreseen that activities will be sub-contracted to competent local organisations. Community and social indicators will measure effectiveness in engaging communities in participatory forest and water management activities and receipt of tangible benefits derived from project activities which contribute to improved livelihoods and food security.

147. GEF funds will be used to support incremental costs of developing and implementing a comprehensive research and impact monitoring programme relative to assessing the global benefits of biodiversity conservation and carbon sequestration. Baseline and impact surveys will be conducted for each of the project outputs. The two global benefits to be generated by the GEF Alternative are biodiversity conservation and climate change (carbon storage and sequestration): biodiversity assessment will be pitched at the ecosystem level, assessing the distribution and condition of forest types; and carbon sequestration estimates will concentrate on agricultural lands where the most significant changes are likely to occur as a result of improvement in soil and water management practices and promotion of farm agroforestry and energy-efficient technologies. The approach for assessing benefits are briefly discussed below:

- **Biodiversity.** Forest diversity will be assessed by ground survey and subsequent mapping exercise in order to determine canopy cover and distribution of different indigenous and exotic plantation forest types. This information will provide the baseline from which trends can be tracked and will also facilitate prioritisation of forests for protection and rehabilitation depending on their strategic occurrence and perceived or real threats.

- **Carbon sequestration.** Conservation of carbon stocks in forests and enhancement of carbon sequestration on agricultural land is the second global environmental benefits that will be

[13] The quantitative results expected from expect component are detailed in the part of the Logical Framework provided in Annex 2. Annex 8 on Research Monitoring and Information Management provides an overview of the approach and indicators to be used.

generated by the project. Funds are provided for field surveys to establish variation in soil carbon in relation to: (a) soil type (unit); (b) land management practices and farm socio-economic status; (c) vegetation biomass; and (d) climate. This will allow estimation and extrapolation of changes in carbon sequestration across agro-ecological zones and land uses and the impact of adoption of improved soil and water management practice as a result of project initiatives.

- **Trends in Forest Degradation.** Funds are provided to undertake aerial surveys and ground truthing to determine trends in forest degradation as a result of illegal activities, wildfire and human encroachment and assess the impact of forest protection measures.

- **Impact of wildlife barriers on wildlife and human livelihoods.** In order to evaluate the impact of wildlife barriers on wildlife and human livelihoods, provisions will be made to evaluate: (a) the effectiveness of barriers in resolving conflicts; (b) wildlife population dynamics; (c) wildlife habitat condition; and (d) changes to community livelihoods as a result of protection of cropland wildlife incursions by comparing baseline and subsequent surveys.

148. **Key impact indicators.** A preliminary list of indictors has been developed to assess the various environmental and socio-economic aspects of the project components. It is critical that all relevant actors are involved in indicator selection to ensure ownership and acceptance. Selection at local level will require a combination of technical expertise and local knowledge, which will be undertaken during implementation

149. **Key ecological indicators.** Monitoring of ecological and conservation impacts will review overall changes and trends in: (a) sustainable allocation and use of water resources; (b) forest diversity, rehabilitation, protection and management; (c) soil condition and management; (d) carbon sequestration; and (e) impact of wildlife barriers on wildlife populations and habitat.

150. **Key social and economic indicators.** Community and social indicators will focus on measuring effectiveness in engaging communities in participatory forest and water management activities, adoption of improved soil and water practices and tangible benefits derived from project activities which contribute to improved livelihoods and food security. Key indicators could include: (a) number of communities and members (by gender) actively involved in participatory forest and water management; (b) communities involved in and maintaining project initiated benefit-generating activities; (c) proportion of income from non-farm sources including project activities and proportion from traditional sources; farm profits; household income per capita; (d) adoption of improved soil and water management practices; and (e) crop productivity, food security and livelihoods.

Lessons Learned - Technical Reviews.

151. The IFAD project experience with projects in Kenya is that the disbursement of funds has generally been low due to complex government financial management procedures. Most projects have adopted a top-down approach with little participation by rural communities – the same stakeholder group who is the target of project benefits. The greatest IFAD project successes in Kenya have been where community-led and community driven initiatives have played a significant part in project design and implementation. The key to the ensuring community participation is that they must have a voice in all matters related to the management and they must benefit, socially and economically; directly and indirectly from the resources they are managing.

152. This lesson has been closely integrated into the design of all activities. Community mobilisation and ownership building is a leading element for ensuring the expected output of all activities (water user associations, community groups for agro-forestry, and training in participatory techniques for government technical staff).

153. During the community consultative workshops funded under PDF-Block B, communities from all the districts singled out elephants as the greatest threat to their livelihoods. They also unanimously agreed that barriers especially fences are most effective and labour-efficient means of controlling the problem. However, there are past examples around Mount Kenya where fences have been constructed using donor funds but subsequently fell into disrepair because they were not maintained as agreed. Two important lessons have been learned by local communities and KWS. First, attitudes have changed significantly over the past ten years, and communities have become increasingly convinced that electric fences represent the best long-term cost and labour effective option for preventing wildlife incursion into their lands. Second, KWS has learned a great deal about the participatory process prior to construction of wildlife barriers and the selection of the type of barrier, and while participatory processes may take time, it is crucial to ensuring community ownership and commitment to barrier maintenance. Thus, the project will support wildlife barriers where communities have demonstrated that they have the organizational and financial capacity to maintain fences in the long term.

154. All community-based activities under the project will work through self-help groups who are active and keen to be involved in conservation management of their environment. Women's groups are particularly well organized and receptive to creating alternative and sustainable income generating activities.

ANNEXES

1. Incremental Cost Analysis
2. Project Logical Framework
3. (a) STAP Technical Review and (b) IA Response to Review
4. Maps of Project Area and the Mt Kenya National Park and Reserve
5. Dynamics of Environmental Degradation in Project Area
6. Mt. Kenya Management Plan
7. Ongoing Donor Interventions
8. Research Monitoring and Information Management
9. Ecosystems Threat and GEF Alternative Response
10. Benefits by Financier by Operational Programme 12 and 15
11. Letter of Endorsement from Government of Kenya

ANNEX 1: INCREMENTAL COSTS, DOMESTIC AND GLOBAL BENEFITS

BROAD DEVELOPMENT GOALS

155. The Government's **Poverty Reduction Strategy Paper (PRSP)** published in 2001 sets the overall goals of reducing the proportion of people living in extreme poverty by half and of reducing poverty prevalence to less than 30% by 2015. During the consultation process that led to its elaboration, the Agriculture and Rural Development sector has been given top priority, consistent with the fact that the sector is the main source of livelihood for about 80% of the total population and that at least three quarters of the poor live in rural areas. Crop development, rural water, livestock development and food security have been identified as the priority issues within the sector.

156. As a tool to achieve the PRSP objectives, the **Economic Recovery Strategy for Wealth and Employment Creation, 2003-07 (ERS)** was published in June 2003 by the Government of Kenya to outline its development strategy, policies and priority areas of intervention for the next 5 years. It is based on four pillars and five cross-cutting themes. The four pillars are: (a) macro-economic stability to create an enabling environment for rapid economic growth; (b) strengthening institutions of governance to set the ground for sustainable development; (c) rehabilitation and expansion of physical infrastructure, in particular for transport, energy and telecommunications; and (d) investment in the human capital of the poor with a strong emphasis on health and education. A strong emphasis is given to the recovery of productive sectors including agriculture, tourism, trade and industry. Specific envisaged interventions in the agricultural sector would focus on: providing a single enabling legislation to replace the large number of legislations in the sector, rationalising the roles and functions of agricultural institutions to empower the poor farmers, increasing institutional efficiency, strengthening extension services and increasing access to credit by the smallholders.

157. The area surrounding Mount Kenya outside the boundaries of the Forest Reserve is subject to considerable population pressure because of its relatively high agro-ecological potential. This pressure combined with increasing processes of land and water degradation and poor social and economic infrastructure and services is gradually leading to the erosion of the potential of the natural resources of Mount Kenya and the consequent impoverishment of the surrounding communities. In such context poverty reduction and improvement of the living conditions and incomes of the local communities remains the major development goal in Mount Kenya area.

GLOBAL ENVIRONMENTAL OBJECTIVE

158. The conservation of Mount Kenya ecosystem is of global and national interest due to its importance as a biodiversity reservoir, water catchment area and source of livelihoods for the surrounding communities (see section I of the project brief). This diversified and important ecosystem is under serious threat because of human pressure (poverty and demographic growth), institutional constraints and climate change, which give rise to illegal activities such as forest encroachment, logging and poaching, human wildlife conflicts on land use, unregulated and excessive water use and agricultural practices that are harmful to soil conservation. Investment and actions are needed to support a more sustainable and environment-friendly use of the natural resources of this ecosystem, which must necessarily envisage a stronger involvement of surrounding communities in its management.

159. The Mount Kenya East Pilot Project for Natural Resource Management (MKEPP), for which the GEF co-financing is proposed, aims to reduce poverty and improve food security and income levels of farmers and rural women through more productive, equitable and sustainable use of natural

resources in Mount Kenya area and in particular by reducing visible accelerating land degradation processes and improving access to and management of water resources.

160. The **conservation, management and sustainable and equitable use of biological resources of Mount Kenya ecosystem** is therefore at the same time an intermediate objective of MKEPP and a global environmental objective that can justify GEF financing under OP 12 on Integrated Ecosystem Management.

161. The aim of OP 12 is the "adoption of comprehensive ecosystem management interventions that integrate ecological, economic, and social goals to achieve multiple and cross-cutting benefits", which may include: (a) conservation and sustainable use of biological diversity, as well as equitable sharing of benefits arising from biodiversity use; (b) reduction of net emissions and increased storage of greenhouse gases in terrestrial and aquatic ecosystems; (c) conservation and sustainable use of water bodies, including watersheds, river basins, and coastal zones; and (d) prevention of pollution of globally important terrestrial and aquatic ecosystems. MKEPP is expected to contribute to all these four levels of benefits.

162. In addition, MKEPP is expected to contribute to global environmental objectives in terms of carbon sequestration and soil degradation, with linkages to OP 15 on Sustainable Land Management, the aim of which is the "mitigation of the causes and negative impacts of land degradation on the structure and functional integrity of ecosystems through sustainable land management practices".

BASELINE

163. The expected amount for baseline financing during the period of implementation of MKEPP is summarised in table 1. As some projects, namely CKDAP and FORREMS, also cover geographic areas outside Mount Kenya, only a percentage of their committed financing for that period has been considered for the baseline.

Table 1: Expected Baseline Financing in Mount Kenya Area (USD million)

	Period	Total financing	Financing 7/2004-6/2011[b]	% for baseline	Baseline financing
CKDAP (IFAD and GoK)	2001-07	18.0	12.6	50%	6.3
KWS Mt. Kenya area (GoK)	Annual	0.5	3.5	100%	3.5
FD Mt. Kenya area (GoK)	Annual	0.5	3.5	100%	3.5
COMPACT II (GEF and UN Found.)	2004-07	0.9	0.9	50%	0.45
FORREMS (USAID)	2003-06	1.7	1.5	40%	0.6
TOTAL					**14.35**

Notes: ([a]) Over the period July '04 - June '11
([b]) Including other geographic areas in the case of CKDAP and FORREMS (less than 100% considered for baseline).

164. Below, we briefly present the baseline interventions by MKEPP output and we clarify the assumptions used for their allocation to the different outputs.

Baseline - Output 1: Water Resource Management

165. The Central Kenya Dry Areas Smallholder Project (CKDAP, 2001-07), is already working in dry areas of two districts (Nyeri and Kirinyaga) surrounding Mount Kenya - on the southern and western sides – and is addressing aspects related to domestic water supply and the development of water use for agricultural purposes. Although not in the original design of the project, the emphasis of the water component is now being shifting from a pure infrastructure perspective to a more integrated approach taking into account water management aspects and the need to support water users' associations as a tool for an improved, more equitable and more sustainable management of the

resource. Moreover, Laikipia district,[14] in the North-West side of Mt. Kenya area, is being considered for inclusion in CKDAP for aspects related to water management and support to water users' associations. The expected baseline expenditure in support of this output is about USD 2 million.

Baseline - Output 2: Environmental conservation

166. Two Government institutions and a few donor funded projects are intervening in Mount Kenya area specifically addressing environmental conservation of the ecosystem. KWS has a mandate to manage and protect biodiversity within the boundaries of the National Park and Reserve and to ensure peaceful interaction between wildlife and the communities surrounding the protected area. They are engaged in a range of activities from tourism management, including revenue collection and mountain rescue activities, to patrolling of the protected areas against illegal activities and the control of wildlife movements to prevent the destruction of crops, human livelihoods and livestock. The financial resources allocated annually by KWS to activities in Mount Kenya area are about 41 million Ksh (USD 520,000) including personnel and recurrent expenditure. The Forest Department (FD) is the government institution mandated to manage forest and tree resources in the country, meaning protection against tree poaching, grazing, fires and diseases, use regulation including licensing for forest products, policing of protected areas and forest extension work outside gazetted areas (farm agro-forestry). The double gazetting of the Mount Kenya Reserve and the lack of clear boundaries between plantation and indigenous forests have led some uncertainty on the actual competence of FD in the Reserve. The financial resources allocated annually by GOK to the FD in the five Districts around Mount Kenya are about 8 million Ksh/district (USD 100,000) for personnel and recurrent expenditure, for a total of about 40 million Ksh (USD 500,000) for the five districts.

167. The demand-driven nature of the COMPACT project, whereby NGOs, CBOs and local communities can access funds to finance initiatives and small projects broadly aiming at biodiversity conservation of the Mount Kenya ecosystem, makes it difficult to allocate its expected financing to the different MKEPP outputs. The projects eligible for financing are of several types, including some that may be more directly related to the environmental conservation output of MKEPP, such as establishment of tree nurseries, replanting of degraded forests by communities, development of ecotourism initiatives, community training on natural resource management, promotion of dialogue, exchange of information and awareness creation on the Mount Kenya ecosystem, etc. For the purpose of our analysis, and on the basis of the experience of the first phase of COMPACT, we assume that the USD300,000 already committed non-GEF resources for the period 2004-07 will go to contribute to environmental conservation.

168. The FORREMS is mainly an institutional strengthening programme for KWS and FD, to reinforce GOK capacity in natural resource management. The bulk of the allocated USD 1.7 million is going for training of the newly recruited forest guards (about 1,000) and some institutional support and capacity building of the two institutions. Some activities, however, are specifically implemented in the north-eastern area of Mt. Kenya,[15] such as the elaboration of a joint fire management plan for Mt. Kenya ecosystem, the upgrading of the fire fighting capacity (equipment, water pumps, etc.) of some forest stations, the completion of the Mt. Kenya Ecosystem Management Plan, the piloting of commercial plantation management through outsourcing and participatory forestry management with communities' involvement; and some other activities on ecological monitoring and database development. We assume that about 40% of the remaining 1.5 million USD, that is USD 600,000, will be spent in the Mount Kenya area on activities directly contributing to the environmental conservation output of MKEPP.

Baseline - Output 3: Rural Livelihoods

[14] This district, although strictly not bordering with the Natural Reserve, has important linkages with Mt. Kenya ecosystem because of its proximity to the area.
[15] Naromoru, Gathiuri and Nanyuki in Nyeri District and Mucheene, Ontulili and Meru in Central Meru

169. The main objective of Central Kenya Dry Areas Smallholder Project (CKDAP) is to contribute to reducing poverty and vulnerability to diseases and hunger of the poor rural communities through the provision of social and physical infrastructure and the improvement of household incomes. A strong emphasis is therefore on the improvement of the livelihoods of the communities of its intervention area through: (a) investments in agricultural development (crop and livestock production technologies, agricultural services such as research/extension, marketing/processing, credit, etc. and soil conservation measures); (b) support to off-farm income generating activities; and (c) improvement of socio-economic infrastructure and services such as primary health care, sanitation, domestic water supply and others identified by the communities themselves as their own priorities. It is assumed that about USD 3.3 million will be spent by CKDAP on activities contributing to output 3 of MKEPP.

170. COMPACT has also been investing on the improvement of the livelihoods of communities surrounding Mount Kenya, with the aim to reduce pressure on forest resources. Given the demand-drive nature of the project, it is expected that about USD150,000 non-GEF resources committed by the project for 2004-07 will go to finance activities that will contribute to output 3 of MKEPP. Assistance to communities to identify and implement income-generating activities such as beekeeping and fish farming or the installation of solar fences to reduce damages to agricultural crops and wildlife/human conflicts over resource utilisation are some examples of activities of this type financed during the first phase of the project. Wildlife barriers in particular have received support from various donors during the last few years given the high priority attached to it by local communities. Despite that, the establishment of barriers remains by far below the needs expressed by the population.

Baseline - Output 4: Community Empowerment

171. CKDAP is the only intervention in Mount Kenya area that provides specific support to community development through capacity building of grassroots organisations and the provision of funds to finance micro-projects identified by the communities themselves. It is expected that USD 1 million of its allocated funds will go to finance this component. Other small projects and NGOs are supporting the empowerment of rural communities in the area of Mount Kenya, but no systematic information is available to estimate their expected contribution, which would in any case be marginal in terms of amount of funds.

172. In table 2 shows the baseline financing summarised by the MKEPP output to which it is expected to contribute.

Table 2: Baseline Financing by MKEPP Output (USD million)

	Water resource management	Environmental conservation	Rural livelihoods	Community empowerment	Project management	TOTAL
CKDAP	2.0	-	3.3	1.0	-	6.3
KWS Mt. Kenya	-	3.5	-	-	-	3.5
FD Mt. Kenya	-	3.5	-	-	-	3.5
COMPACT II	-	0.3	0.15	-	-	0.45
FORREMS	-	0.6	-	-	-	0.6
TOTAL	**2.0**	**7.9**	**3.45**	**1.0**	**-**	**14.35**

GEF ALTERNATIVE

173. The socio-economic study[16] of Mount Kenya area undertaken during the preparation phase of MKEPP identifies "relentless deforestation, poor water management, soil erosion, and various processes of land degradation together with low productivity of agricultural systems" as mutually reinforcing impacts of human activity on the environment resulting from a fragmented and uncoordinated approach to natural resources and ecosystem management, which will eventually have negative feedback effects on the socio-economic situation of the communities around Mount Kenya.

174. The linkages between poverty and environmental degradation in the Mount Kenya ecosystem are complex and go in both directions (see section II.A, main report). Poverty forces the surrounding communities to rely more heavily and exert more pressure on natural resources, even within protected areas, for their livelihoods. This happens with little concern for the long-term sustainability of the resources and for the consequent negative effects on biodiversity and ecosystem conservation. Poor management and overexploitation of the natural resources are gradually leading to their depletion, thus undermining in the medium-term main livelihood source of the surrounding communities.

175. The combination of investments to improve the conservation and management of natural resources and reduce the poverty of surrounding communities is the strategy adopted by MKEPP to lay the foundations for a long-term sustainable management of the natural resources of the Mount Kenya ecosystem. The complementarity of global environmental objectives and development goals is therefore embedded in the very approach followed by the project.

Table 3: Incremental cost financing by output (USD million)

	GEF		IFAD		GoK		Benef		Total	
	Amount	**%**	**Amount**	**%**	**Amount**	**%**	**Amount**	**%**	**Amount**	**%**
A. Water Resource Management										
1. River Basin Management	0.13	3.1	3.83	92.9	0.17	4.1	-	-	4.12	15.5
2. Community Water Development	-	-	4.22	74.1	0.31	5.4	1.17	20.5	5.69	21.4
Subtotal Water Resource Management	**0.13**	**1.3**	**8.05**	**82.0**	**0.47**	**4.8**	**1.17**	**11.9**	**9.82**	**36.9**
B. Environmental Conservation										
1. Community Natural Resource Managem.	-	-	1.66	94.4	0.08	4.8	0.01	0.8	1.76	6.6
2. Ecosystem Conservation and Management										
a. Forest rehabilitation	1.43	72.8	-	-	0.09	4.6	0.44	22.6	1.96	7.4
b. Ecosystem management capacity	1.50	82.0	-	-	0.33	18.0	-	-	1.83	6.9
c. Research, monitoring and informat. managem.	0.33	83.6	-	-	0.06	16.4	-	-	0.39	1.5
Subtotal Ecosystem Conserv. and Managem.	3.26	77.9	-	-	0.48	11.5	0.44	10.6	4.18	15.7
Subtotal Environmental Conservation	**3.26**	**54.8**	**1.66**	**27.9**	**0.57**	**9.6**	**0.46**	**7.7**	**5.94**	**22.3**
C. Rural Livelihoods										
1. On-farm Soil and Water Conservation	-	-	1.37	73.4	0.09	4.9	0.40	21.7	1.87	7.0
2. Income Generating Activities	-	-	0.67	74.6	0.02	1.8	0.21	23.6	0.89	3.4
3. Marketing	-	-	1.09	64.1	0.14	8.5	0.47	27.5	1.71	6.4
4. Human/Wildlife Conflict Resolution	1.03	67.6	-	-	0.14	9.0	0.36	23.4	1.53	5.7
Subtotal Rural Livelihoods	**1.03**	**17.2**	**3.13**	**52.2**	**0.39**	**6.5**	**1.44**	**24.0**	**5.99**	**22.5**
D. Community Empowerment										
1. Community Development	-	-	1.29	92.4	0.07	4.7	0.04	2.9	1.39	5.2
2. Strengthening District Technical Capacity	-	-	0.35	95.3	0.02	4.7	-	-	0.37	1.4
Subtotal Community Empowerment	**-**	**-**	**1.64**	**93.0**	**0.08**	**4.7**	**0.04**	**2.3**	**1.76**	**6.6**
E. Project Management	**0.31**	**10.2**	**2.27**	**73.6**	**0.50**	**16.2**	**-**	**-**	**3.09**	**11.6**
Total PROJECT COSTS	***4.73***	***17.8***	***16.74***	***63.0***	***2.01***	***7.6***	***3.11***	***11.7***	***26.59***	***100.0***

176. The total incremental cost (MKEPP) is therefore USD 26.6 million, which gives a total of USD 40.95 million for the GEF alternative. In table 3 one can find the details of the expected financing of the incremental costs. GEF is expected to contribute to 17.8% of the incremental costs

[16] Socio-economic Reconnaissance Study for the proposed Mt. Kenya East – Tana River Catchment Conservation, Land Use and Water Management Pilot Project. ETC (2002): Final Report, Nairobi April 2002.

(USD 4.7 million), while the remaining 72.2% would come from co-financing sources, namely IFAD (USD 16.7 million), the Government of Kenya (USD 2.0 million) and the beneficiaries (USD 3.1 million). A summary MKEPP cost table by components is provided in attachment 1. In table 4 there is a summary of baseline and incremental costs by output.

Table 4: Summary of baseline, incremental costs and total GEF alternative (USD million)

	Baseline	Incremental costs (MKEPP)					GEF alternative
		GEF	Co-financing			Total	
			IFAD	GoK	Benef.		
Water resource managem.	2.00	0.13	8.05	0.47	1.17	9.82	11.82
Environmental conserv.	7.90	3.26	1.66	0.57	0.46	5.94	13.84
Rural livelihoods	3.90	1.03	3.13	0.39	1.44	5.99	9.89
Community empowerment	1.00	-	1.64	0.08	0.04	1.76	2.76
Project management	-	0.31	2.27	0.50	-	3.09	3.09
TOTAL	***14.35***	***4.73***	***16.74***	***2.01***	***3.11***	***26.59***	***40.95***
		(18%)	***(63%)***	***(8%)***	***(12%)***	***(100%)***	

177. Below we briefly discuss them and highlight the expected domestic and global benefits. A summary of the incremental cost analysis, including the baseline and GEF alternative financing, as well as the expected domestic and global benefits, is in attachment 2 to this annex.

GEF Alternative - Output 1: Water Resource Management

178. The incremental costs for output 1 are USD 9.8 million, of which about USD 130,000 will be financed by GEF. These would add to a baseline of USD 2 million for a total GEF alternative of USD 11.8 million.

179. MKEPP will address the issue of uncoordinated and excessive upstream water abstraction and inefficient water use for irrigation and urban consumption, leading to declines in downstream flows and water availability, by: (a) improving the management of river basin and catchment areas through strengthening of capacity of the water departments, support to formation and capacity building of Water Users' Associations, participatory preparation of river catchment management plans, improvement of river intakes, awareness campaigns on water use and hygiene education; and (b) developing community-based water services mainly through rehabilitation and/or construction of infrastructure for efficient irrigation and domestic water supply. GEF would only finance the development of a Water Resource Management strategy and guidelines as well as decision support tools to strengthen KWS capacity to actively participate in Mount Kenya watershed management, given that water abstractions within protected areas have a direct impact on biodiversity conservation.

180. The main expected domestic benefits are in terms of improved efficiency, equitability and sustainability of water use and the consequent improvement of livelihoods of upstream and downstream communities depending on this resource for production and domestic purposes. A more sustainable use of Mount Kenya water resources and watershed is also expected to bring considerable global benefits in terms of conservation of the whole ecosystem.

GEF Alternative - Output 2: Environmental Conservation

181. The incremental costs for output 2 are USD 5.9 million, of which about USD 3.3 million will be financed GEF. These would add to a baseline of USD 7.9 million for a total GEF alternative of USD 13.8 million.

182. Under this output MKEPP will address environmental degradation and promote sustainable management of natural resources thereby reversing the land degradation process currently occurring in the area. This will be achieved through the improvement of natural resource conservation and management in both protected and non-protected areas. In non-protected areas, the activities will focus on community rehabilitation of degraded lands (trust lands, communal lands, reclaimed wetlands, river banks, road embankments, etc.) and the promotion of energy efficient technologies for charcoal production and use. These will be financed by IFAD contribution.

183. GEF would finance the activities related to natural resource conservation and management within protected areas (National Park and Reserve), which would absorb about 70% of the total GEF funding. Despite its genuine commitment to the conservation and protection of Mount Kenya National Park and Reserve, the GOK has limited resources to invest for this purpose. Biodiversity conservation does not rank high in GOK development priorities, whose efforts are primarily focusing on poverty alleviation. The limited resources available reduce the scope of the mandated institutions (KWS and FD) to take pro-active management actions, with a general lack of capacity to sustainably manage the NP&R as a valuable resource to the advantages of the local, national and international communities. Surrounding communities are marginally involved in the management of the resources and are mainly reduced to the role of users of protected areas on a paying basis for services such as fuel wood collection, beekeeping, etc.

184. GEF incremental financing is therefore needed in order to set up and support a framework for sustainable conservation and management of the Mount Kenya ecosystem. The main activities financed will be: (a) rehabilitation of degraded forests; (b) strengthening of the management capacity with the active involvement of all relevant stakeholders including the forest-adjacent communities; and (c) reinforcement of KWS for long-term ecological and biodiversity monitoring and research.

185. Several domestic and global benefits are expected from this output. The reduction of land degradation and soil erosion as a result of rehabilitation and conservation activities in both protected and non-protected areas will generate both a domestic benefit, through the positive impact on the overall agricultural productivity in the area and thus on the livelihoods of the rural communities, and global environmental benefits in terms of enhanced carbon sequestration/holding capacity of forest and non-forest areas, and reduced pollution of water ways and river siltation. Further global benefits are also expected in terms of conservation of globally significant biodiversity, in particular within the National Park and Reserve, as a result of the rehabilitation and protection of forest areas, the increased sustainability of biodiversity protection through a more effective participation of local communities (benefit sharing) and the strengthening of regulating institutions (KWS) and the improved capacity for biodiversity and natural resource long-term monitoring and planning within protected areas. Finally, increased revenue for KWS and increased and more equitably shared benefits from forest resources for surrounding communities are also some of the expected domestic benefits.

GEF Alternative - Output 3: Rural Livelihoods

186. The incremental costs for output 3 are USD 6.0 million, of which about USD 1.0 million from GEF. These would add to a baseline of USD 3.45 million for a total GEF alternative of USD 9.45 million.

187. Under this output MKEPP will: (a) support on-farm soil and water conservation activities to increase fertility and productivity of agricultural land; (b) promote off-farm income generating

activities to diversify the income sources of rural households; (c) improve the marketing of agricultural and forest products; and (d) reduce human/wildlife conflicts on land.

188. IFAD would finance activities under (a), (b) and (c), while GEF would finance the actions towards human/wildlife conflict resolution. These will include the establishment of wildlife barriers, the training and capacity building of communities for their long-term maintenance and a study for the planning of a long-term solution for wildlife migratory corridors.

189. Global benefits are expected from this component through the reduction in soil and water degradation and enhanced carbon sequestration/holding capacity and resolution of human/wildlife conflicts reducing loss of protected species, in particular elephants. The direct benefits of this output are of a domestic nature, namely in terms of the enhanced food security and reduced poverty at household level through sustainable increases of on-farm production and income (higher land productivity, higher agricultural yields through reduction of crop damage by wildlife and better market opportunities for agricultural products) as well as off-farm incomes. This will indirectly contribute to biodiversity conservation by reducing the human pressure on natural resources in protected and non-protected areas.

GEF Alternative - Output 4: Community Empowerment

190. The incremental costs for output 3 are USD 1.8 million, to which GEF is not expected to contribute. These would add to a baseline of USD 1.0 million for a total GEF alternative of USD 2.8 million.

191. MKEPP will promote community empowerment by: (a) strengthening the capacity of community based organisations, in particular for what concerns needs identification and prioritisation, design of solutions and project preparation as well as other relevant technical and managerial skills; and (b) strengthening of the technical capacity of district technical staff for a more effective and relevant service delivery to local communities, with particular emphasis on participatory tools for community development, community mobilisation and organisation, development, assessment and management of community project proposals, etc.

192. Although no GEF funding is expected to contribute to this output, GEF will finance specific community empowerment activities related to other outputs, such as the training and follow-up of communities engaged in pilot projects for forest management and rehabilitation and the support to communities eventually taking over the maintenance of wildlife barriers.

193. Benefits expected from this output are almost exclusively of a domestic nature: communities empowered for a more active participation in planning, implementation and monitoring of development activities and improved service delivery by local technical staff from district offices are likely to result in improved effectiveness of poverty reduction interventions. However, better organised and structured communities are also likely to be more effective and reliable partners in ecosystem management and biodiversity protection.

GEF Alternative - Output 5: Project Management

194. The incremental costs for output 5 are USD 3.1 million, of which about USD 0.3 million from GEF. No baseline is related to this output, so that the GEF alternative coincides with incremental costs of USD 3.1 million.

195. MKEPP will finance the establishment and functioning of a Project Management Unit. GEF financing is expected for institutional strengthening of KWS for implementation of activities in the National Park and Reserve as well as for monitoring and evaluation of project impacts on global environmental objectives.

Attachment 1: Incremental Costs (MKEPP) by Components

	(KSh Million)			(USD Million)			% Foreign Exch.	% Total Base Costs
	Local	Foreign	Total	Local	Foreign	Total		
A. Water Resource Management								
1. River Basin Management	122.11	156.47	278.57	1.57	2.01	3.57	56	15
2. Community Water Development	213.14	168.29	381.43	2.73	2.16	4.89	44	21
Subtotal Water Resource Management	**335.25**	**324.76**	**660.00**	**4.30**	**4.16**	**8.46**	**49**	**36**
B. Environmental Conservation								
1. Community Natural Resource Management	62.70	55.24	117.94	0.80	0.71	1.51	47	6
2. Ecosystem Conservation and Management								
a. Forest rehabilitation	112.74	25.64	138.38	1.45	0.33	1.77	19	8
b. Ecosystem management capacity	69.46	65.74	135.20	0.89	0.84	1.73	49	7
c. Research, monitor. and inform. managem.	16.95	11.82	28.77	0.22	0.15	0.37	41	2
Subtotal Ecosystem Conserv. and Managem.	199.14	103.19	302.34	2.55	1.32	3.88	34	17
Subtotal Environmental Conservation	**261.85**	**158.43**	**420.28**	**3.36**	**2.03**	**5.39**	**38**	**23**
C. Rural Livelihoods								
1. On-farm Soil and Water Conservation	57.43	67.59	125.02	0.74	0.87	1.60	54	7
2. Income Generation Activities	23.94	35.90	59.84	0.31	0.46	0.77	60	3
3. Marketing	69.83	44.41	114.24	0.90	0.57	1.46	39	6
4. Human/wildlife conflict resolution	63.36	45.98	109.34	0.81	0.59	1.40	42	6
Subtotal Rural Livelihoods	**214.56**	**193.88**	**408.44**	**2.75**	**2.49**	**5.24**	**47**	**22**
D. Community Empowerment								
1. Community Development	35.50	59.35	94.85	0.46	0.76	1.22	63	5
2. Strengthening District Technical Capacity	13.12	12.20	25.33	0.17	0.16	0.32	48	1
Subtotal Community Empowerment	**48.62**	**71.56**	**120.18**	**0.62**	**0.92**	**1.54**	**60**	**7**
E. Project Management	**145.15**	**68.64**	**213.78**	**1.86**	**0.88**	**2.74**	**32**	**12**
Total BASELINE COSTS	1,005.43	817.26	1,822.68	12.89	10.48	23.37	45	100
Physical Contingencies	28.97	34.21	63.17	0.37	0.44	0.81	54	3
Price Contingencies	129.46	58.83	188.29	1.66	0.75	2.41	31	10
Total PROJECT COSTS	***1,163.85***	***910.29***	***2,074.15***	***14.92***	***11.67***	***26.59***	***44***	***114***

Attachment 2: Incremental Costs, Domestic and Global Benefits

MKEPP Output/Component	Source of finance	US$ Million	Domestic Benefits	Global Benefits
Water Resource Management	• Baseline • Incremental costs - Co-financing - GEF • GEF alternative	2.00 9.82 9.69 0.13 ----- 11.82	• Improved efficiency, equitability and community awareness of water use and consequent improvement of communities' livelihoods • Effective management and protection of Mt. Kenya watershed (NP&R), on which several millions of Kenyans depend for water • Reduced pollution of water ways (siltage)	• Enhancement of Mt Kenya ecosystem services pertaining to watershed functioning and regulation of downstream flows.
Environmental Conservation	• Baseline • Incremental costs - Co-financing - GEF • GEF alternative	7.90 5.94 2.68 3.26 ----- 13.84	• Reduction of land degradation and soil erosion in non-protected areas (agricultural lands, trust lands, communal lands, reclaimed wetlands, cultivated river banks and road embankments) and protected areas (forest). • Savings in energy expenses • Increased and more equitably shared benefits from forest resources for surrounding communities • Increased revenue for KWS.	• Enhanced carbon sequestration/holding capacity and reduced greenhouse gas emissions through rehabilitation of degraded land in protected and non-protected areas and promotion of on-farm agro-forestry. • Rehabilitation, protection and management of globally significant biodiversity (NPR) • Enhancement and protection of carbon store through rehabilitation and conservation of forests • Improved capacity for biodiversity and natural resource monitoring and planning within protected areas. • Increased sustainability of biodiversity protection through strengthening of regulating institutions (KWS) and participation of local communities (benefit sharing). • Enhanced GoK capacity to fulfil and report on global environmental commitments • Continuous functioning of weather station for monitoring climate change

MKEPP Output/Component	Source of finance	US$ Million	Domestic Benefits	Global Benefits
Rural Livelihoods	• Baseline • Incremental costs - Co-financing - GEF • GEF alternative	3.45 5.99 4.96 1.03 ----- 9..44	• Improvement in food security and income and poverty reduction through: - Increased productivity through better soil & water management - Creation of alternative IGAs - Better marketing of agricultural/forest products - Increased agricultural yields and income through reduction of crop damage by elephants	• Reduction in land degradation hence maintenance of the Mt. Kenya Ecosystem • Enhanced carbon sequestration/holding capacity in the agricultural and protected areas, reduced greenhouse gas emissions through improved soil and water conservation and sustainable agricultural practices. • Reduced human pressure on biodiversity in protected areas (National Reserve). • Reduced loss of protected species (elephants) because of human/wildlife conflict
Community Empowerment	• Baseline • Incremental costs - Co-financing - GEF • GEF alternative	1.00 1.76 1.76 - ----- 2.76	• Empowerment of communities for participation in planning, implementation and monitoring of development activities. • Improved service delivery to local communities.	• None
Project Management	• Baseline • Incremental costs - Co-financing - GEF • GEF alternative	- 3.09 2.77 0.32 ----- 3.09	• Effective management of MKEPP activities	• (Effective management of the MKEPP activities is functional to the realisation of all the above mentioned global benefits)

MKEPP Output/Component	Source of finance	US$ Million	Domestic Benefits	Global Benefits
SUMMARY OF PROJECT COSTS				
	• Baseline • Incremental costs - Co-financing - GEF • GEF alternative	14.35 26.59 21.86 4.73 ----- 40.95		

ANNEX 2: Logical Framework*

Narrative Summary	Objectively Verifiable Indicators (OVIs)	Means of Verification (MOV)	Assumptions
Development Goal To contribute to poverty reduction through more productive, equitable and sustainable use of natural resources through integrated ecosystem management.	• Food security • Household production and income	• Survey reports • Welfare monitoring reports (every 3 years) • Economic surveys (annual) • Survey reports from stakeholders	• Intentions of the PRSP with regard to natural resources use realised • Relevant legislation framework enacted and enforced
Integrated Project Environmental Objective Improved conservation, management and sustainable and equitable use of biological resources of Mount Kenya ecosystem by farmers and in the protected areas	• Sustainable agricultural production increased by 25% on 25 000 ha of land for 50 000 household (260 000 people). • Improved Biodiversity conservation and Integrated Ecosystem Management on 213 000 ha of land in the National Reserve and 1 000 ha in agricultural areas	• PMU and M&E reports • Ground and aerial surveillance surveys • FD/KWS/Community reports	
Intermediate Purpose in Agricultural Areas Visible accelerating land degradation processes are reduced and equitable and sustainable use of natural resources is enhanced, with reduced menace from wildlife for people.	• 15% reduction of soil erosion on 25 000 ha of land and 25% reduction of sediment load in rivers • Ensured base water flow downstream during the dry season • Number of animals/people killed or injured because of conflict reduced by 80 %	• PMU and M&E reports • Annual reports from Government technical services • DWO (Hydrology) reports • River gauging records • KWS incident reports	• Long-term water management capacity is sustainably improved • Farmers adopt SWC measures on their plots • Wildlife incursions into farmlands are prevented
Intermediate Purpose in National Park and Reserve (NP&R) Improved biodiversity conservation, more equitable and sustainable use of natural resources and enhanced overall management capacity with the involvement of stakeholders in National Park and Reserve	• Forest integrity maintained and biodiversity protected on 3 800 ha of land • Degree of community involvement and participation to conservation activities and benefits enhanced by 50 % in 72 Focal Development Areas target communities and with reference to human/wildlife conflict resolution, selected 2 160 community members representing households** involved directly in human/wildlife conflict resolution along the 397 km stretch targeted for the establishment of wildlife barriers	• PMU and M&E reports • Ground and aerial surveillance surveys • FD/KWS/Community reports	• Improved rural livelihoods reduce human threats to NP&R • Mandates of KWS and FD on Mt. Kenya ecosystem management are clarified and enforced

* This logical framework shows the development goal, environmental objective, intermediate purposes, outputs and activities of the MKEPP. GEF financed activities are shown in italics in the Activity Section

** There are an estimated 42 groups to be formed for human/wildlife conflict resolution covering the 397 km stretch that require the barriers. Each group comprises 50 persons, one person/household.

Narrative Summary	Objectively Verifiable Indicators (OVIs)	Means of Verification (MOV)	Assumptions
Outputs (Components)			
1 Water Resource Management 1.1 Water use efficiency enhanced through: 1.1.1 Improvement of river basin management 1.1.2 More efficient water systems at community level	1.1.1 More water storage in upper catchments and better water management with stable or increasing flows downstream during the dry season 1.1.2 Functioning and regularly updated water resources database *1.1.3* Approved water abstractions in NP&R in line with hydrological assessments	1.1.1 DWO (Hydrology) reports 1.1.2 Water resources plan 1.1.3 River gauging records	1.1.1 Community-based water management through RUAs is effective 1.1.2 Rainfall continues to remain constant
2 Environmental Conservation 1.1 Natural resource management and biodiversity conservation improved through: 2.1.1 Rehabilitation and community management in non-protected areas 2.1.2 Forest rehabilitation in protected areas 2.1.3 Stabilisation of road embankments *2.1.4 Improved ecosystem management capacity by all stakeholders* *2.1.5 Improved capacity of KWS for research, monitoring and information management*	2.1.1 Surface of non-protected areas sustainably rehabilitated 2.1.2 Canopy cover and distribution of forests 2.1.3 Frequency and impact of disturbances in protected areas 2.1.4 Reduced human/wildlife conflicts 2.1.5 Kms of road embankments planted 2.1.6 Equitable benefits to communities 2.1.7 Time spent on proactive rather than reactive activities 2.1.8 M&E and other data/information coordinated, collated, disseminated and used for effective management	2.1.1 Ground survey and satellite mapping 2.1.2 Participatory field surveys 2.1.3 KWS work plans and budgets and periodical reports 2.1.4 PMU reports 2.1.5 KWS research station scientists' reports 2.1.6 FD/KWS/NGO/Community	2.1.1 Absence of extreme climatic or fire events 2.1.2 Policy supporting community involvement in forest management is maintained 2.1.3 KWS research station continues to receive GOK support 2.1.4 Road embankments are protected
3 Rural Livelihoods 3.1. Livelihoods of rural communities improved through: 3.1.1 Better on-farm soil and water management 3.1.2 Development of off-farm income generating activities (IGAs) 3.1.3 Improved marketing of agricultural products *3.1.4 Reduction of human/wildlife conflict over land*	3.1.1 Increased crop yields, soil nutrients and fertility 3.1.2 No and types of materials, No of groups reached 3.1.3 Farm and off-farm IGAs promoted, in reduced and reduced livestock mortality 3.1.4 Increased household incomes due to processing of farm produce at farm level 3.1.5 Frequency and impact of animal incursions into farmlands 3.1.6 Reduction in number of animals/people killed or injured because of conflict	3.1.1 KARI, DALEO reports 3.1.2 DWO (Hydrology) reports 3.1.3 DECO/DFO reports 3.1.4 Surveys (DSDO, PMU) 3.1.5 KWS incident reports 3.1.6 KWS monitoring of wildlife populations 3.1.7 Community verbal reports	3.1.1 Farming communities and individual farmers increase their SWC measures 3.1.2 Economic environment in Kenya is favourable 3.1.3 Markets for smallholder products operate efficiently 3.1.4 Wildlife incursions into farmlands are prevented
4. Community Empowerment 4.1. Local level governance capacity improved through: 4.1.1 Establishment/strengthening of CBOs, NGOs,	4.1.1 Increased number of functional grassroots organisations 4.1.2 Improved service delivery	4.1.1 DSDO, DDO reports 4.1.2 DWO reports 4.1.3 PMU and M&E reports	4.1.1 CBOs and councils understand negative impact of current resource use and encourage appropriate human behaviour 4.1.2 Government services work closely with

County Councils and other grassroots organisations 4.1.2 Strengthening of GOK district technical services for service delivery to communities			local communities
5 Project Management 5.1.1 Effective implementation and management of project activities	5.1.1 PMU established and actually managing activities in agricultural areas 5.1.2 KWS strengthened and actually managing activities in protected areas (NP&R)	5.1.1 PMU reports 5.1.2 KWS reports (including staff numbers and community activities)	5.1.1 PMU is able to coordinate District techn. serv. for water management/SWC activities 5.1.2 Financial flows are timely 5.1.3 KWS in Mt. Kenya NP&R is strengthened by additional recruitment

Narrative Summary	Objectively Verifiable Indicators (OVIs)	Means of Verification (MOV)
Activities		
1. Water Resource Management 1. River basin management 1.1.1 Develop sub-basin water management plans 1.1.2 Improve river intakes 1.1.3 Support water resources data management activities 1.1.4 Strengthen capacity of MOWRD for monitoring water abstractions 1.1.5 Develop and adopt strategy, guidelines and decision support tools for enhancing KWS participation in permit approval process 1.1.6Community water development 1.1.7Rehabilitate/construct community based water efficient systems (domestic use and irrigation)	1.1.1. 7 Sub-basin management plans; 40% by mid-term the rest by PY7 1.1.2. 25% of river intakes improved by PY2, 25% by mid-term and the rest by project end 1.1.3. 47 RGS established, 19 rehabilitated, 1 bacteriology Analysis System and 15 chemical field water testing kits, No. of office/ field equipment, by PY2 1.1.4. 15 Technical staff trained, Equipment supplied by PY2. 1.1.5. A Guidelines document outlining the procedures and conditions to be met for issuance of water permits by mid-term. 1.1.6. All new abstractions/reservoirs effectively controlled by KWS (about 4/dist//year) 50% of abstractions old water schemes regularised by mid-term. 1.1.7. 463 projects on community based water efficient systems developed 1 000 Ha irrigation (10 schemes), 45 spring development, 35 small gravity flow, 32 small dam/pan, 70 shallow wells, and 286 roof top water harvesting 40% by PY3, 80% by PY6 and the rest by project end. .	1.1.1 Training reports, inventory 1.1.2 Field visits/measurements Documents 1.1.3 Progress reports
2. Environmental Conservation 2.1 Community natural resource management 2.1.1Promote on-farm agro-forestry and off-farm/trust land re-forestation/stabilisation, and roadside erosion control 2.1.2Support protection of natural wetlands and assess feasibility of constructed wetlands 2.1.3Promote energy efficient technologies for charcoal production and use 2.1.4Forest rehabilitation 2.1.5Replant and protect selected degraded forest areas 2.1.6Improve and rehabilitate forest transport infrastructure (roads and bridges) 2.1.7Ecosystem management capacity 2.1.8Promote participatory forest management through pilot projects and retraining of KWS/FD staff on participatory methodologies 2.1.9Support preparation of forest operational management plans 2.1.10 Elaborate and implement an eco-tourism development plan 2.1.11 Set up fire control units and fire towers 2.1.12 Institutional strengthening of KWS 2.1.13 Research, monitoring and information management 2.1.14 Strengthen Mweiga Research Station for long term monitoring and research 2.1.15 Set up research outpost in NP headquarters	2.1.1. 1 000 Ha afforested, 500 trees/Ha 90% seedling survival about 2,500 farmers to be involved, 250 Ha by PY3, 400 PY4 & PY5 and the rest by project end. 2.1.2. 100kms of roadside embankments planted, 10 Km/ year from PY1-PY4, 15Km/year PY5-PY7. 2.1.3. 1 260 farmers trained in wetland protection through 42 training sessions 6 sessions/year from PY1-PY7. 2.1.4. 2 800 Ha, (1 950 Indigenous, 850 Plantation) Forest area replanted by type and survival percent. 10% by PY1, 35% PY2 and the rest by project end 2.1.5. 5 bridges and 17.5Km of roads rehabilitated, 2 bridges 8 Km by PY2 and the rest by PY4 2.1.6. 2 forests Hombe and Irangi to be managed by communities, to begin in PY2 2.1.7. 6 operational forest management with full involvement of communities in forest management and net benefits generated. 2/year for the from PY1-PY3. 2.1.8. 30% increase in tourists and revenue collection (from current levels of 14 000 visitors to 2.1.9 18 000 and USD 700 000 to USD 900 000 respectively by project end. 2.1.9. 50% reduction of forest area burned annually by PY2 80% reduction in frequency and impact of illegal forest by project end 2.1.10. Development of Tourism plan for the National Park by PY2. 2.1.11. Improve fire fighting capacity of KWS/FD; 6 fire towers constructed, 8 water browsers, 30 water pumps, 24 power saws acquired by PY2 2.1.12. Upgrade Radio communication system in the NP, supply electricity to the national park and Sirimon Gate, purchase 3 mountain rescue kits and 1 ambulance by PY 1 2.1.13. train 48 rangers, train 3 accountants by PY2 2.1.14. rehabilitate 20 outposts, construct 1 ranger barrack, 2 dog kennels, Rehabilitation Mweiga Research station; 2 GIS systems, computers and other necessary equipment, establish 1 Research Outpost in Mt. Kenya by PY3.	2.1.1 DALEO, PMU, Progress/Annual reports; Field visits; Aerial and land surveys 2.1.2 Participatory monitoring of planted areas 2.1.3 Progress reports from implementers 2.1.4 Socio-economic surveys and FD/KWS/NGO/Community reports 2.1.5 FD/KWS reports 2.1.6 Mt. Kenya National Park tourist records 2.1.7 Aerial surveillance surveys and FD/KWS/Community occurrence reports 2.1.8 KWS HQ and KWS Research Station progress reports

Narrative Summary	Objectively Verifiable Indicators (OVIs)	Means of Verification (MOV)
Activities		
3 Rural Livelihoods 3.1 On-farm soil and water management 3.1.1 Promote on-farm soil and water conservation measures to increase fertility and productivity of agricultural land 3.1.2 Enhance agricultural technology dissemination and up scaling 3.2 Off-farm IGAs 3.2.1 Support processing of natural resources and agricultural products (honey, vegetables, milk etc.) 3.2.2 Support promotion of small livestock keeping (dairy goats, poultry, sheep, rabbits etc.) 3.2.3 Promote sustainable preventive and curative systems for livestock and livestock breed improvement Marketing 3.2.4 Enhance access to marketing and price information by target groups 3.2.5 Carry out spot rehabilitation of selected access roads 3.3 Human/wildlife conflict resolution 3.3.1 Establishment of wildlife barriers 3.3.2 Capacity building of local communities for barriers maintenance 3.3.3 Development of a long-term strategy for the elephant migratory corridors	3.1.1. 5 000 farmers members of 168 FFS involved in S&WC, No. of structures, 40% FFS by PY3 and 60% by PY5. 3.1.2. 1 320 farmers adopting/adapting technologies,20% increase in acreage and yields, change in cropping pattern by mid-term 3.1.3. 1 320 farmers/ groups involved in processing (60% women and youth) by mid-term. 3.1.4. 2 400 farmers supported and 200 bucks bought and distributed by mid-term 3.1.5. 72 community animal health workers and community artificial insemination assistants trained by PY2 3.1.6. 200 cows inseminated in PY3 and this increasing to 600/year by PY4 30% increase in livestock productivity and 50% reduction in calf mortality by PY5. 3.1.7. 2 400 farmers trained in marketing by PY 4 3.1.8. 100 km of roads rehabilitated (km) by project end 3.1.9. 397 km of barriers established 100km by PY2 and the rest by project end 3.1.10. 397km of barriers operational 3 years after establishment 3.1.11. Training farmers on the maintenance of barriers 42 Community groups (2 160 persons)each group to hold, 6 training sessions in PY1, 4 in PY2, 2 in PY3 3.1.12. One strategy document on elephant migratory corridors by PY2	3.1.1 DALEO, PMU Reports 3.1.2 Field visits 3.1.3 DALEO,KARI, PMU Reports 3.1.4 Field visits 3.1.5 Records 3.1.6 Field visits 3.1.7 DALEO, DSDO, DWO, DLPO, DVO reports 3.1.8 KWS quarterly, semi-annual and annual reports, community reports and PMU periodical surveys 3.1.9 Strategy document
4. Community Empowerment 4.1. Grassroots associations and groups 4.1.1. Conduct a socio-economic baseline survey 4.1.2. Mobilise communities 4.1.3. Support formation of specific functional groups and associations (eg water user associations and marketing groups) 4.1.4. District technical services 4.1.5. Train frontline staff on participatory methodologies, gender, etc.	4.1.1Baseline surveys for 7 sub-basins by PY2 4.1.25 040 farmers trained in 168 community meetings and attendance by mid-term 4.1.372 functional groups formed and operational by mid-term 4.1.4550 training sessions for 13 RUAS, 6 representatives/WUA, 288 sessions for the WUAs, 5 040 farmers FFS members, 72 CBO, 58 IGAs Groups(1 640 farmers) and 25 front line staff trained 40% training by PY3, 60% by PY4 and the rest by PY5	4.1.1 Survey reports 4.1.2 Minutes of meetings 4.1.3 Progress reports (Constitution, registration certificates, returns/renewals) 4.1.4 Training reports
5. Project Management 5.1.1. Establish PMU *5.1.2.* Strengthen KWS for implementation of activities in the National Reserve (GEF) as well as for monitoring and evaluation of impacts on global environmental objectives	5.1.1Effective implementation of IFAD-Funded activities by PY1 5.1.2Effective implementation of GEF-Funded activities by PY1	5.1.1 PMU reports 5.1.2 KWS reports

ANNEX 3A: STAP ROSTER REVIEW - MT. KENYA EAST PILOT PROJECT FOR NATURAL RESOURCE MANAGEMENT

SCIENTIFIC AND TECHNICAL REVIEW OF THE PROJECT PROPOSAL

1. INTRODUCTION

This Report follows the standard Terms of Reference for STAP reviews. This review focuses primarily on the requested GEF assistance component, which amounts to 17.8% (US$4.73 million) of total project costs. This component is broadly to support environmental conservation through addressing:

(a) tools for watershed development within the protected areas
(b) ecosystem conservation and management, especially of forests
(c) human/wildlife conflicts
(d) Kenya Wildlife Service support, especially M&E of project impacts.

The developmental aspects of the proposal are also relevant because they have an emphasis on water resource management, community natural resource management, rural livelihoods, and community empowerment. These are essential activities to underpin the success of the measures to promote environmental conservation.

The GEF funding is therefore requested to provide catalytic or incremental assistance to assure the safe and environmentally-sustainable development of the Mount Kenya eco-zone, an internationally important area for biodiversity of mountains and tropical forests and a source of considerable sediment and land degradation that affects adjacent areas. To a considerable degree, incremental GEF funding for environmental conservation activities is to be based operationally on cost sharing.

While the Brief is well presented, there are some matters requiring the attention of an editor. Repetitions could be reduced; some inconsistencies between the text and the logical framework addressed; some typographical errors[17]; and some departures from the standard GEF headings[18]

2. KEY ISSUES

Scientific and technical soundness of the project

The Mount Kenya East Pilot Project for Natural Resource Management (MKEPP) is designed as a joint IFAD, Government of Kenya and GEF initiative to address the substantial threats to the unique ecosystems of Mount Kenya. It is good to have this high-level national and international level stakeholder involvement.

[17] There are some typographical errors and undue reliance is placed on spell-checkers. 'Principle' is mis-spelt as 'principal' in at least two places; 'sue' instead of 'use' in para 90; etc. There are a few incorrect statements, such as the relevant OP for Integrated Ecosystems Management (No.15) in para 131.

[18] The GEF Programming Context and Rationale for GEF funding are, for example, hidden in other sections.

Mount Kenya itself is a protected area, containing four distinct eco-zones, each with its own distinctive flora and fauna. Interactions between these eco-zones are vital to the biodiversity, ecosystem functioning and ecosystem services of the whole wider area, especially of the land use systems surrounding the national park and wildlife reserve. A project here, in an area containing so much wild and managed biodiversity, is to be warmly commended. The project's attention to the various eco-zones, its integration of managed and wild biodiversity, and its attention to rural livelihoods are welcomed.

There has been a long history (over 70 years) of protection for Mount Kenya, but it is only relatively recently (2000) that full protected status as a National Reserve has been granted under the direction of KWS. The Project Brief brings out well in Annex 5 the threats to the National Reserve brought about by pressure from adjacent areas of land use – illegal logging, poaching of wildlife, *shamba* (shifting cultivation) systems, fires and human-wildlife conflicts. It is an opportune time now in the development of environmental thinking and legislation to have a pilot project such as this in Kenya.

The Brief stresses the links between poverty and environmental degradation, both in the main part (Baseline Conditions, paras 37-40) and Annex 5. However, the analysis is almost wholly technical and most of the processes of degradation (Table 2, Annex 5) are about *immediate* or *proximate* causes and impacts. The conceptual logic for the project (Figure 1, Annex 9) uses the DPSIR framework – which is good as it links well to other GEF-funded initiatives – but without explicit drivers that are social and political. It could be argued that to ignore these *intermediate* causes and drivers of change would be to invite failure to achieve project objectives over the medium to longer term. The Brief should give due weight to the key political ecology aspects that can make or break a project that will affect many stakeholders with conflicting objectives and different livelihood needs. [Strengthening in main Brief, Annex 5 and Annex 9]

To illustrate, there are important and current issues of governance in Kenya, which are debated openly at high level nationally[19] and internationally[20]. Principal stakeholders, including GoK, recognise that social and political solutions have to be factored alongside the ecological and technical. For issues of governance, these should be explicitly addressed as drivers of degradation but also as issues that should be taken up by local and technically-based stakeholders such as KWS. Governance and institutions feature only in one paragraph of the main Brief (#39), in the context of greater involvement of communities, and a change from regulation to participation. Illegal and unregulated activities (paras 21-22, Annex 5) occur because of institutional failure. The authors of the Brief are encouraged to reflect upon the political ecological aspects of Kenya in Akama *et al* (1996).[21] An examination of the case study of the Green Belt Movement of Kenya by UNRISD[22] would also be instructive. Its thesis is that

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[19] See UNDP, Kenya - http://www.ke.undp.org/democratic%20Governance.htm

[20] E.g. World Resources Institute - http://earthtrends.wri.org/pdf_library/country_profiles/Env_cou_404.pdf

[21] John S. Akama, Christopher L. Lant and G. Wesley Burnett (1996). A Political-Ecology Approach to Wildlife Conservation in Kenya. *Environmental Values* 5: 335-347.

[22] Cyril Obi (2002) *Environmental Movements in Sub-Saharan Africa: A Political Ecology of Power and Conflict.* Paper prepared for the World Summit on Sustainable Development, Johannesburg. United Nations Research Institute for Social Development, Geneva, 27 pp. Available at: http://www.unrisd.org

environmental movements in Africa operate within a transformative logic in which struggles for power over environmental resources connect broader social struggles for popular empowerment and democracy.

The project has five Outputs (paras 92-119; Annex 2, Logical Framework)[23]. These are:

1. Water resource management (1.3% GEF funded)
2. Environmental conservation (54.9% GEF funded)
3. Rural livelihoods (21.7%)
4. Community empowerment/local governance (zero GEF funded)
5. Project Management/implementation of Activities (10%)

These adequately cover the range of activities that will be needed to address integrated ecosystem management, and it is welcome to note that the balance in outputs tends not to reflect the technical bias in the text of the Brief itself (see above point for action). This reviewer is pleased to note the quantitative targets in GEF-financed and non-financed Activity OVIs for Outputs 1 to 4 (e.g. 72 community animal health workers; one strategy document on elephant migratory corridors; etc.). This strengthens the Logical Framework as well as giving guidance to the management of the whole project – but see Output 5 below.

Substantial attention in Outputs 4 and 5, which are 'developmental' components, will go towards supporting local community structures, though under 'Activities' Outputs 4 and 5 appear rather 'thin'. This reviewer recommends that Output 4 'community empowerment' is more than just 'mobilisation'. How will the community groups be strengthened, for example? Resources? Visits to other groups? Education and training in community groups? It is recognised that Output 4 activities will be almost wholly funded from sources other than GEF, but the Brief makes the key point that support for local capacity in NRM (especially forest management and wildlife-human conflict resolution) is fundamental to environmental conservation as a whole. Similarly, Output 5 the 'implementation of project activities' may deserve more elaboration than simply setting up a project management unit and 'strengthening' KWS[24]. It is also the only Output not to have quantity-based OVIs. The current OVI uses the vague term 'effective implementation'. Who determines effectiveness and how?

This reviewer would have liked to see some economic rationale for the structures, institutions and measures to be developed. This relates partly to 'sustainability' – see below – but also to justifying the expenditure over 7 years of considerable resources on what still is intended to be a pilot project. There are some obvious synergies between Outputs that the Brief could have explored. For example, increasing livelihoods from the Baseline may enable stronger local institutions. However, the Brief is largely silent on what may be achieved economically and whether such additional monies that may be generated could ensure continuation after the end of the project.

[23] But note that the logical framework and brief text do not exactly correspond in Output titles – this should be harmonised.

[24] In strengthening KWS, the Brief repeats the same activity at Output 2 (#2.1.5) as at Output 5 (OVI#5.1.2). This needs rationalisation preferably by concentrating all these activities in Output 5 in a rather more detailed set of logical steps.

Identification of the global environmental benefits and/or drawbacks of the project
Identifying the incremental benefits for OP12 integrated ecosystem management projects is an inexact science. Annex 1 attempts a most useful and pleasingly detailed incremental cost analysis. The Broad Developmental Goals are admirably rooted in Kenya's PRSP (2001) and Economic Recovery Strategy (2003). While the Mount Kenya eco-zone is relatively small in extent, its importance in developmental terms is magnified by the high population and good quality of natural resources. This well sets the scene for a convincing incremental cost assessment.

The Baseline is built on the current situations of poverty, demographic pressures, poor institutions and climate change, with specific drivers drawn from many of the illegal and unsustainable practices (e.g. *shamba* system) that are all too evident in the area. The GEF (global) alternatives are well described in Annex 1 against each Output. Taking the main Output for GEF funding (Output 2), seven global benefit items are identified ranging from carbon storage to enhanced capacity to report on global environmental commitments. As with most OP12 and OP15 projects, the arguments for the domestic benefits are somewhat more compelling and evidence-based. Nevertheless, within the guidance parameters for building a global environmental benefit justification, the authors of this project have managed to build a satisfactory case, albeit on little solid evidence. There are, however, a few strange assignments in the incremental cost matrix in Annex 1. It is difficult to understand how or why a "better organised and structured community" is a global benefit. Why are reduced loss of elephants a 'rural livelihood' global benefit? This matrix does need re-examination and the assignment of benefits a closer examination

How the project fits within the context of the goals of GEF
The project has excellent *potential* to support the goals of the GEF. However, the case is not made strongly enough to justify GEF funding.

The proposal implicitly supports the Operational Program 12 *Integrated Ecosystem Management*. The project sensibly fits the overall program objective: "catalyzing widespread adoption of comprehensive ecosystem management interventions that integrate ecological, economic and social goals to achieve multiple and cross-cutting local, national and global benefits." It meets the OP12 objective through two of the four conditions in OP12 (para 11): (a) conservation and sustainable use of biodiversity; and (d) conservation and sustainable use of water bodies. This reviewer would have found it helpful if, instead of burying the rationale for GEF financing in paras 83-86 of Section III of the Brief, the rationale is more explicitly drawn and links made to OP12 (and OP3, 4 and 15). With the widened GEF mandate to include developmental aspects as part (albeit co-financed) of projects, the links to food security, livelihoods and well being are consistent with priorities. The link to poor rural land users is perhaps less well made, especially as reduction of poverty is a NEPAD priority.

OP12 was designed by GEF to be multi-focal, which in the context of Mt Kenya means that there must be global benefits related to biodiversity and climate change. The IA informs this reviewer that this has been discussed between UNEP and IFAD, but the attention to global benefits remains somewhat tenuous in the present Brief. The biodiversity case is self-evident,

although there could and should be a monitoring programme to evaluate the impact of the project; however, there is very little on climate change indicators such as carbon storage or increase in biomass. A good case could be made that project activities will sequester substantially more carbon. Not only will control of the *shamba* system increase biomass in the eco-zone but attention to sustainable forestry, agroforestry and more productive land uses, preferably based upon organic amendments, will increase soil organic carbon. The soils of the Mt Kenya region have been depleted of much organic matter under current land uses, and this indicator itself could be used to show a very substantial global benefit of the project. Already in Western Kenya, there are smallholder carbon projects that could provide a model for activities with communities around Mount Kenya.[25] The project and its EA institutions can well support a simple monitoring of global benefits, and this would be best located in Output 5 as part of the PMU responsibilities.

Two suggestions are made to improve the link to global benefits:
(1) A paragraph should be inserted under 'Global Importance' with a sub-heading, as follows:

> **Carbon sequestration**. The forests on Mt. Kenya provide important sinks for carbon. Sustainable management of the forest and surrounding agricultural lands will enhance sequestration of carbon both above and below ground and hence contribute to reduction of greenhouse gas emissions from the ecosystems on Mt. Kenya.

(2) Project activities for monitoring biodiversity (by KWS and/or KEFRI) and carbon storage (by the PMU, possibly, or contracted out to KARI) be included under the Activity sets for Outputs 2 and 5. Project Management (Output 5) does need better specification. A monitoring component for both global and domestic benefits would assist this elaboration.

The project engages well with the two relevant global conventions. Under the CBD it addresses the conservation status of threatened biodiversity, as well as having some measure of agricultural biodiversity on surrounding land uses. The CBD provides for the conservation of biological diversity and the sustainable use of its components, both of which are objectives of this project.[26] The MKEPP is, however, less forthcoming on the third CBD objective: the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. This could usefully be strengthened as it will be a key aspect of the sustainability of the project.

Under the UNCCD, the project meets several of the objectives: viz, adopting an integrated approach addressing the physical, biological and socio-economic aspects of the processes of desertification and drought; integration of strategies for poverty eradication into efforts to combat desertification and mitigate the effects of drought; and the promotion of the use of existing bilateral and multilateral financial mechanisms and arrangements that mobilize and channel substantial financial resources to affected developing country Parties in combating desertification and mitigating the effects of drought.[27]

Regional context

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[25] See Forum for Organic Resource Management and Agricultural Technologies, which works in Kakemega under the World Bank Biocarbon Fund - http://www.formatkenya.org/CARBON_MEETING.htm
[26] CBD – see http://www.biodiv.org/convention/articles.asp
[27] UNCCD – see http://www.unccd.int/convention/text/convention.php?annexNo=-2

The Mount Kenya eco-zone is in many ways unique. The mountain itself is iconic regionally and is a magnet for tourists and local people alike. However, its hillside, steep-slope environments and farming systems are similar to others in East Africa. The Aberdares are relatively close to Mount Kenya and have similar challenges. More widely, the Eastern Arc chain of mountains in northern Tanzania (Usambaras, Pare, Kilimanjaro, Mt Meru, Ngorongoro Highlands) entertain many of the same problematic issues as Mount Kenya. This mountain chain is a series of more-or-less isolated mountains like Mt Kenya, which have been heavily covered by forests. Much of the original forests, especially at the more accessible or lower elevations, have been converted for agricultural crops. These mountains are recognized as one of 24 globally important "hot spots" for forest biodiversity according to Conservation International. These mountains also serve as water catchments for urban areas. There is opportunity here for the experiences and lessons on Mt Kenya to be up-scaled to other mountain regions in Africa. Given the emphasis in GEF on regional impacts and up-scaling more widely than national boundaries, it would seem that an opportunity to establish wider regional impact has been lost. The proposers are urged to consider the possibilities of this, maybe under the auspices of ASARECA, based at Entebbe, for agricultural research activities and IUCN Regional Office Nairobi for conservation activities. Also ICRAF's Eco-Regional project at Kabale (African Highlands Initiative) could be specifically invited as a partner with substantial experience of working in similar environments.

Replicability of the project

The project is intended to be a 'pilot' for the eastern side of Mount Kenya. It is not entirely clear from the Brief the precise boundaries to be taken. The Second Map at Annex 4 seems to imply the whole national park will be taken, while Map 1 identifies some key districts such as Embu, Meru, Tharaka. Nanyuki and Nyeri are not included, although they too contain high density populations and substantial threats to the integrity of the Mt Kenya eco-zone. In that the MKEPP will strengthen local institutions and KWS, a measure of replicability has already been structured into this pilot. This is an aspect that will need to be monitored and evaluated as the project progresses.

Sustainability of the project

The proposal states that the project's main claim to sustainability is through the participation it will engender and a research outpost built for KWS in the Mt Kenya ecosystem (paras 124-127). Participation cannot by itself ensure sustainability, especially as it is the project itself that will 'mobilise community participation'. Sustainability needs to be built upon the institutions the project will foster, both local and national, and the economic and institutional drivers for continuation. The Brief mentions the increase in revenues for tourism and forest-related activities, but there is no mention of *where* those revenues will go. The answer is presumably to central government funds. Mention is also made of increased productivity of land use activities – but again how these will then relate to project sustainability is not explicitly addressed.

This reviewer would like the project explicitly to address sustainability question such as:

1. What are the long-term vision and goals for the project and its partners?
2. What written commitments has the project obtained about continuation?
3. What contingency plans are there for key personnel and partnership changes?

4. What plans are there for incorporating the project within the institution (including dates and administrator written commitments)?
5. What plans are there for additional funding and support for the project beyond the time of the original grant?
6. What project promotion and marketing plan is there for raising awareness of the project and updating and disseminating its products?

It is recognised that only some of the questions might be answerable at this stage. However, during the appraisal phase of the project and as part of initial project activities – and certainly as part of Output 5 – sustainability questions will need to be answered.

3. SECONDARY ISSUES

Linkages to other focal areas

The project is multi-focal. There is good attention to aspects of integration of biodiversity and land degradation issues, as well as some inclusion of climate change. But see the discussion above about improving the OP12 multi-focal requirements for linkage to biodiversity and climate change.

Linkages to other programmes and action plans at regional or sub-regional levels

The proposal has good **national** linkages through the Ministry of Water Development, Ministry of Environment and Natural Resources, Ministry of Tourism and Wildlife, Kenya Wildlife Service, Forest Department, Kenya Forest Research Institute, and Kenya Agricultural Research Institute. Some **regional** linkages can be built around UNEP networks, while IFAD will have its action plans at regional scale. However, the proposal is reticent in not making any explicit statements of its linkages outside Kenya.

Other beneficial or damaging environmental effects

The project is fundamentally 'environmental', seeking to build a sustainable basis for using ecosystems and protecting national biodiversity assets. No other beneficial or damaging environmental effects are noted.

Degree of involvement of stakeholders in the project

GEF attaches the greatest importance to stakeholder involvement. The proposed project is closely linked to relevant stakeholders at national level. The primary stakeholders in local communities are specifically identified as a target for benefits, while government agencies are the main beneficiaries of capacity building. The project brings together the key agencies in data collection and management (cf Table 2, para 134, Implementation responsibilities). This reviewer is impressed by the attention to stakeholder involvement, and the concentration of effort in the proposal to embrace a wide range of institutions.

Capacity-building aspects

Output 5 is for institutional strengthening of key public services, most notably a Project Management Unit and support for KWS. The project is intended to develop planning capacities in the key ministries (MWRD and MENR), through a range of implementation activities.

Training is not specifically addressed. It is not clear quite how the proposers see capacity as actually being built in order to ensure skills in integrated ecosystems management.

Innovativeness of the project

The innovation of this project primarily arises from its integrated focus between conservation and development objectives, with appropriate funding support in place from donors such as IFAD and commitment from GoK. This reviewer believes strongly that this is the right way to proceed, especially in the context of an eco-zone with a high density of population, great pressure on natural resources and the obvious need to meet the aspirations of a human population that perceive wildlife conservation as a denial of the most productive land. As a 'pilot', the project must build a substantial book of lessons and experiences to apply to the rest of the Mount Kenya eco-zone and to similar mountain environments.

4. CONCLUSIONS AND SUMMARY RECOMMENDATIONS

The project has a sound scientific and technical basis. It is well written, contains sound argumentation and has objectives that are sensible and rational. There is good evidence that the project offers good long-term solutions for integrated ecosystem management around one of the most important sites for sub-Saharan African biodiversity. Suggestions for enhancing the proposal technically, for minimising the risk of failure of some of the interventions and for building wider applicability are made below.

This STAP review commends the project to the GEF as an appropriate use of funds entrusted and an eminently suitable vehicle to drive forward integrated ecosystem management through sustainable land management and conservation of biodiversity of mountain and forest ecosystems in East Africa.

Summary Recommendations on Points that Could be Strengthened

1. *General points.* The Brief requires the attention of an editor in the following respects: repetitions; some inconsistencies between the text and the logical framework; typographical errors; and some departures from the standard GEF headings

2. *Scientific and technical soundness of the project.* .

- address the political ecological aspects of the analysis of causes and impacts of environmental degradation. Suggested inclusion and strengthening of Baseline Current situation in main Brief (#39 onwards), and Annex 5
- highlight some of the *intermediate* drivers of change, including governance and institutions.
- Project outputs: logical framework (Annex 2) and Brief text (paras 92-119) do not correspond in Output titles – Outputs need to be harmonised in descriptors.
- Output 5 deserves more elaboration than simply setting up a project management unit and 'strengthening' KWS. It is also the only Output not to have quantity-based OVIs. The current OVI uses the vague term 'effective implementation'. Who determines effectiveness and how?

3. *Identification of the global environmental benefits.* The proposers are urged to strengthen and rationalise the link to global benefits rather more carefully and systematically:

- Annex 1 matrix needs re-examination, especially on the assignment of benefits, between Outputs and between global and domestic

4. Fit within the context of the goals of GEF

- an additional paragraph should be inserted in the main brief on climate change global benefits
- project activities, probably under Output 5, should include a monitoring programme for both biodiversity and climate change global benefits, using standard indicators such as carbon storage increase
- the project could usefully build in the third CBD objective much more directly – the fair and equitable sharing of benefits of biodiversity

5. Regional context and *replicability of the project*. The proposers are asked to think about the application of project lessons more widely to other parts of the region

6. Sustainability of the project. The project should explicitly address key sustainability questions (paras 124+) and not just assume that 'participation' will ensure continuation.

7. *Secondary Issues*. Some clarifications and elaborations requested – see Section 3 above.

Professor Michael Stocking
STAP Roster Expert (Land Degradation)
University of East Anglia, Norwich UK
9th August 2004

ANNEX 3b: IA and EA Response to the STAP Technical Review

IFAD and UNEP thank the STAP Reviewer for the useful and valuable suggestions made for strengthening the GEF Project Brief, which have provided a basis for careful review, editing and the introduction of some material from IFAD's Apprasial Report into the GEF Brief. In order to ensure maximum synergy between the activities financed by two different financiers, IFAD and GOK have been undertaking substantial effort to ensure the timely processing of the GEF Brief while also ensuring the establishment of the Project Management Unit (PMU) in the project area. The PMU has been established as of 1 July 2004, and will be fully operational by the time that full appraisal of GEF financed activities. The response to STAP reviewer comments have been organised in seven broad topics.

Poverty and Environmental Conservation: The STAP reviewer articulates the well known point that ecosystem conservation and survival of wildlife depends upon developing social and ecological solutions to the problems of underdevelopment. Addressing poverty has been the underpinning conceptual approach for the design of the GEF alternative since IFAD fielded an Inception Mission in October 2001 in response to a formal request by GOK to support better water management for the Tana River basin. At that time, it was clear that the ecosystem threats being experienced were anthropogenic, and without focusing on the livelihoods of the poor people living around the National Reserve, it would not be possible to promote conservation of the forests which provide ecosystem services for the gradual release of water from the watershed. Furthermore, poor people who are IFAD's target groups considered menace from wildlife at one of the major causes of their livelihood problems. While IFAD's mandate focuses on poverty alleviation and includes addressing environmental degradation as part of its agricultural programmes, it would not be possible to finance activities for conservation of the National Park and Reserve and wildlife issues. The blended approach under the proposed project should promote a greater impact both relative to the concerns of poor farmers as well as for conservation of a unique protected area. More information on social and political drivers of environmental degradation has been included in the Brief under Section II Baseline: Driving forces, paragraph 42, and in Annex 9 on Ecosystem Threats, Table 1: Driving Forces, etc. Thus, both the Brief and the annex on ecosystem threats are now highlighting weaknesses of legal and policy frameworks and processes as drivers of environmental degradation.

Political and Legislative Issues. The political and institutional framework relative to environmental issues has been the subject of extensive work by the Government of Kenya and donors over the past ten years. A review of environmental legislation affecting the proposed project was carried by IFAD in March 2002, and this document in its entirety was included in the GEF Concept Note approved in May 2003. Two key pieces of legislation has been passed, the Environmental Act of 1999 and the Water Bill of 2002, while a third piece, the Forest Act is still under discussion. The assessment of the various missions has been that while the policy framework has undergone substantial change in Kenya and provides a suitable framework, but implementation of the new policies was not yet taking place because of weak capacity and lack of financing to introduce the proposed changes. Furthermore, while the new legislation foresaw the management of land and water resources along ecological boundaries, with the involvement of local communities and support from district level technical services (following upon the decentralization of development activities under the 1984 District Focus for Rural Development), there was little work to translate the new policies into field level development activities. Thus, the focus of design activities for the proposed project has been on supporting the implementation of the new policy framework at the District and local level. In order to provide additional context on political issues in the GEF Brief, specific mention has been made of the on-going policy dialogue between GOK and donors

(para 28), and the description of the pending Forest Fill has been strengthened (para 30). The institutional section in the Baseline description has explicitly mentioned the three new pieces of legislation, and discussed the new to now focusing on implementation at the local level of the new policies, both with District technical service and local communities (paras 40-42), while the challenge of promoting institutional change has been noted (para. 119) along with the importance of community participation (paras 124-125).

Institutional Issues. The STAP Reviewer has requested that the description of Output 4 (Enhanced Local Governance and Community Empowerment) and Output 5 (Timely Project Implementation be strengthened. Output 4 is financed by IFAD with no contribution from GEF, and a expanded description from the IFAD Appraisal Report has been included in the GEF Brief describing the role expected from local communities under the new legislation, and the type of activities to be supported (paras 106-111). With regard to Output 5, the STAP reviewer has requested clarification about the institutional arrangements and the specific documents containing a record of the commitment of GOK to their implementation for IFAD-funded activities, and a more detailed description of how KWS will be strengthened to carry out the proposed GEF activities and GOK commitment to ensure their long term sustainability. The description of Output 5 has been expanded to cover the points raised, and includes specific reference to IFAD's loan negotiations and the signed loan agreement committing the Government to the proposed implementation arrangements, as well as an expanded description of the activities planned for strengthening KWS and the commitment obtained from GOK for the recruitment of additional rangers and the inclusion of the payment of their salaries in the Government's annual recurrent budget allocation (paras112-116).

Incremental cost analysis: IFAD and UNEP have closely reviewed incremental cost analysis presented in Annex 1, and revised the allocated of domestic and global benefits in order to achieve greater clarity. **Carbon sequestration**: Furthermore, issues related to carbon sequestration which had not been adequately brought out have been revisited and emphasized, particularly with regard to soil conservation on agricultural lands and reforestation in the National Reserve.

Regional Impacts and Replication: IFAD and UNEP will ensure that lessons from the Mt Kenya project are used in the design of similar projects in the future, and that lessons are disseminated through existing channels, such as publication series, donor working groups, and KWS meetings. Furthermore, many concerned individual from neighboring countries visit Kenya to learn lessons from its experience in wildlife and conservation, and KWS will ensure that the experience gained under the proposed project is shared.

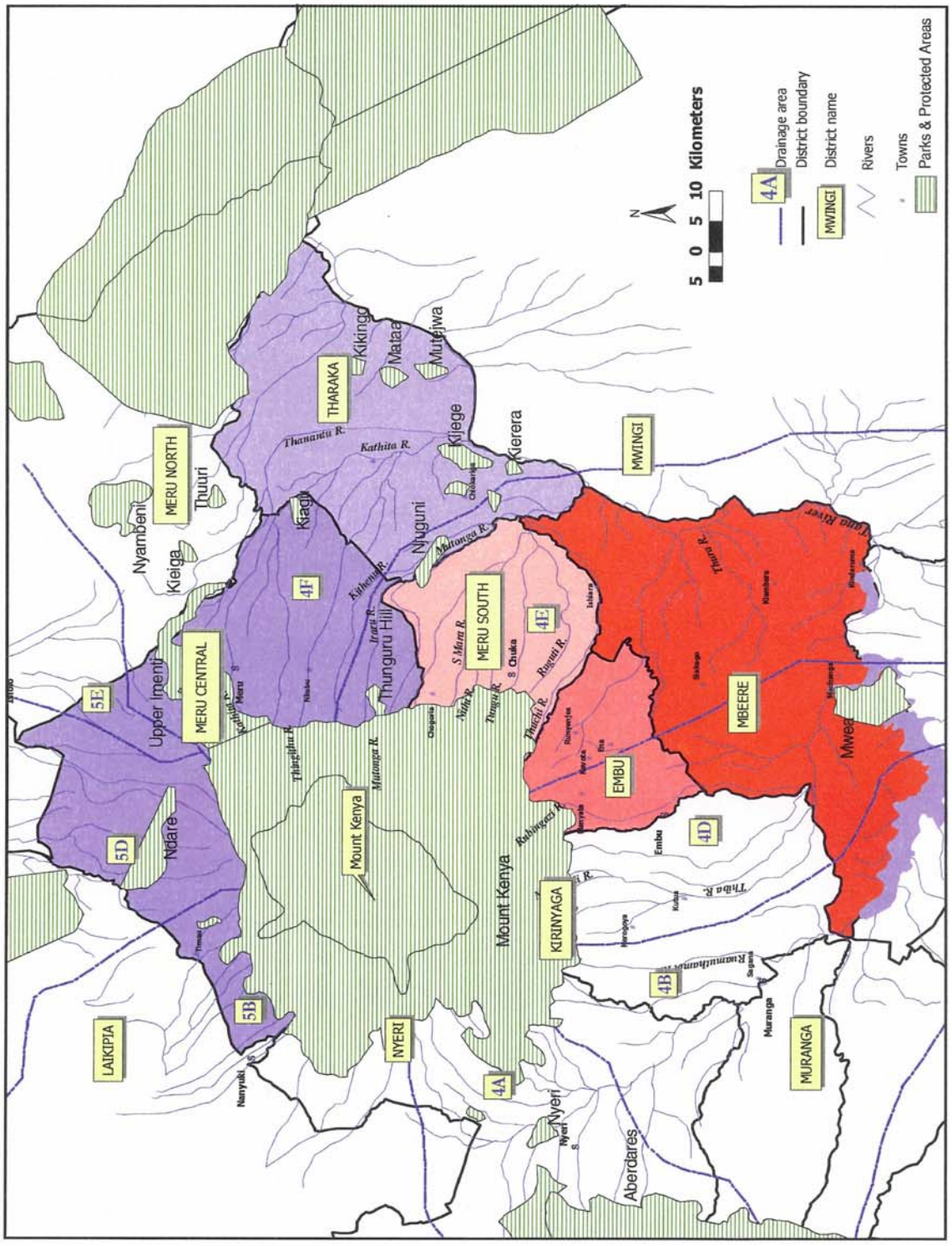
Sustainability. The commitment of GOK to issues of institutional and financial sustainability are discussed above under Output 5, and have been strengthened in the appropriate places in the Brief. Furthermore, a discussion of the interrelationship between poverty and environmental degradation has been included in the section on sustainability, and this presents the economic benefits expected from the IFAD-financed activities in agricultural areas. while noting the importance for reducing threats to the protected areas (para 122). Similarly the importance of reduced menace from wildlife is noted as promoting sustainability for conservation and the protection of wildlife by local communities (para 123).

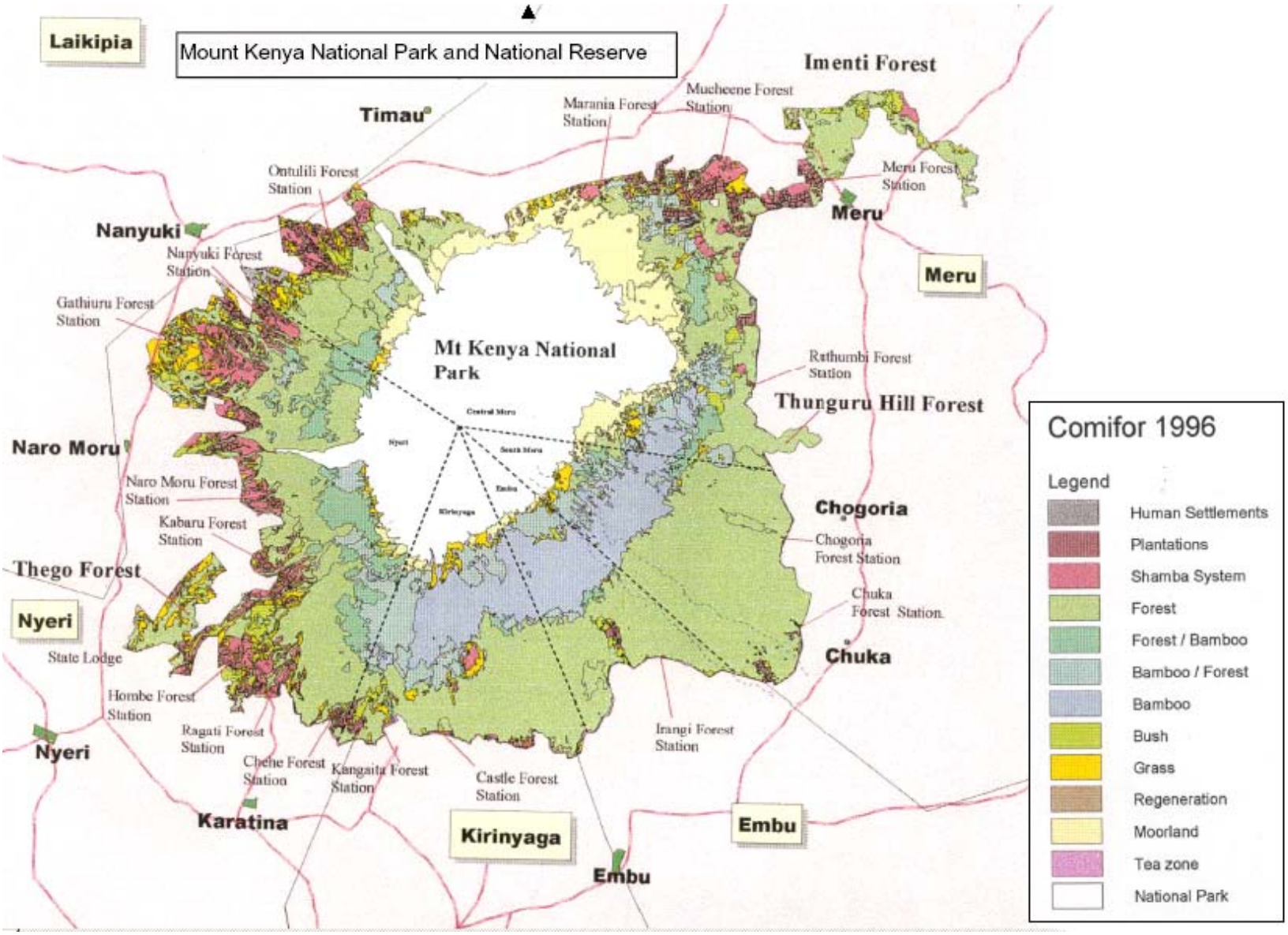
ANNEX 4: MAPS FOR MOUNT KENYA EAST PILOT PROJECT FOR NATURAL RESOURCE MANAGEMENT

MAP 1: THE PROJECT AREA

MAP 2: THE NATIONAL PARK AND RESERVE

MAP 2: THE PROJECT AREA




Laikipia
Mount Kenya National Park and National Reserve
Imenti Forest
Timau
Marania Forest Station
Mucheene Forest Station
Ontulili Forest Station
Meru Forest Station
Meru
Nanyuki
Nanyuki Forest Station
Meru
Gathiuru Forest Station
Mt Kenya National Park
Ruthumbi Forest Station
Thunguru Hill Forest
Naro Moru
Naro Moru Forest Station
Kabaru Forest Station
Chogoria
Chogoria Forest Station
Thego Forest
Chuka Forest Station
Nyeri
Chuka
State Lodge
Hombe Forest Station
Ragati Forest Station
Irangi Forest Station
Nyeri
Chehe Forest Station
Kangaita Forest Station
Castle Forest Station
Karatina
Kirinyaga
Embu
Embu
Comifor 1996
Legend
Human Settlements
Plantations
Shamba System
Forest
Forest / Bamboo
Bamboo / Forest
Bamboo
Bush
Grass
Regeneration
Moorland
Tea zone
National Park

ANNEX 5: DYNAMICS OF ENVIRONMENTAL DEGRADATION IN THE PROJECT AREA

Mount Kenya Region Description

196. Mount Kenya, located about 180 km from Nairobi, has a base diameter of approximately 120 km and reaches an altitude of 5 199 m. Mount Kenya is an extinct volcano with high potential land on its slopes and surrounded by arid and semi-arid lands (ASAL) at its base. Unlike other parks in Kenya, which are usually found in semi-arid areas with low population density, the Mount Kenya National Park and Reserve is surrounded by highly populated agricultural land, cultivated under intensive conditions. Together with the Aberdares, it constitutes the major watershed of the country and provides water to over 50% of the population of the country.

197. **The Mountain.** Mount Kenya itself has four distinct ecological zones: (a) indigenous and plantation forests lying 2 000-3 000 m asl, (b) moorland 3 300-4 000 m, (c) Afro-alpine zone 4 000-5 000 m and the (d) the peak zone, comprises bare volcanic rocks and ice-covered and lying over 5 000 m asl. These ecological zones are divided into two distinct areas for management purposes: (a) the Mount Kenya National Park which covers the area above 3350 m asl and encompasses about 59 000 ha; and the Forest Reserve which includes the indigenous and plantation forests between 2400-3350 m asl encompassing about 213 000 ha, of which 18 000 ha are exotic tree plantations and the rest is predominantly composed of indigenous forest. The Forest Reserve accounts for about 20% of the nation's natural forest and is the largest single block of continuous indigenous forests in the country.

198. Mount Kenya Forest was gazetted as a forest reserve in 1932 under the Forest Department with an aim of protecting indigenous trees and establishing timber plantations. Mount Kenya National Park was established in 1945. In July 2000, GOK gazetted and converted the entire Forest Reserve into a National Reserve to be integrated and managed together with the National Park by the Kenya Wildlife Service (KWS).

199. **Mount Kenya Region.** The Mount Kenya region is a diverse and fragile ecosystem, with land use determined by climate and altitude. Contours are more or less concentrically arranged around the mountain and the following zones can be distinguished:

Table 3: Catchment, Altitude and Vegetation Zones of Mount Kenya

Zone/Original vegetation		Altitude	Annual Rainfall	Present land-use
Watershed and Upper catchment	Afro Alpine	> 3 350m asl	800-1200 mm	National Park
	Forest zone	2 400-3 350m asl	1600-3000 mm	Upper montane forest classified as National Reserve
Middle catchment	Woodland	1 500–2 200m asl	1400-2400 mm	Tea zone
		1 300–1 800m asl	1400-2000 mm	Coffee and banana zone (south east and west); ranching in drier north
		800–1 750m asl	800-1600 mm	Tobacco/maize/millet/cotton/ Zone
	Bushland	600–900m asl	500-900 mm	Semi-arid pastoralist zone (ASAL)
Lower catchment	Bushland	Below 600m asl	Below 800 mm	Pastoralism and agro-pastoralism (ASAL)

200. The afro-alpine zone and the National Reserve (highland forest) are largely uninhabited. Between the forest and the tea zone, there are 'buffer' and 'transition' zones within or adjacent to the National Reserve. The buffer zone is one kilometre wide along the outer perimeter of the National Reserve and the transition zone is 5 km wide in the upper tea zone. The middle catchment includes the

high potential agricultural zones and can be divided into the tea, coffee, and cotton/tobacco zones. These zones cannot be seen in isolation: what happens in one affects the zones below.

201. **Changing land-use**. Many visitors to Kenya perceive 'the mountain' as comprising solely the 'forest zone' (largely delineated by the National Reserve) above 2000-2400 m and the National Park above the forest. What the figures do not reveal is that, 120 years ago, the forest extended as low as the ASAL areas. As population density increased, the forest on the lower slopes of Mount Kenya was cut down to make way for agriculture in what, today, are the tea and coffee zones. The whole area down to 1 200 m was covered by dense tropical hardwood forest and remnants of it are still visible between Meru and Embu.

202. **The Watershed.** Mount Kenya is of major economic and ecological importance as a 'water tower'. It contributes about 50% of water of the Tana River, which in turn provides water for half the population of Kenya. A significant part of this water is derived from the abundant rainfall above the 2000 m contour. There are two rainy periods, the long rains (March to June) and the short rains (October to December). Rainfall varies on the mountain, from 900 mm on the leeward side to 2 300 mm on the windward side annually, and has remained constant over the past 50 years. The conjunction of the altitude and the rainfall received contributes greatly to the biodiversity of the mountain in terms of flora and fauna.

203. The mountain is a 'critical watershed', defined as a forested watershed where the rainfall is >1300 mm and therefore able to support a perennial stream flow. The 'closed canopy' montane forest reduces the erosive force of intense rainfall because the foliage reduces the velocity of the raindrops. Likewise, on the ground, a deep layer of organic matter creates a highly absorptive and retentive soil environment. The result is that most of the rain infiltrates the soil. Water is then slowly released into rivers throughout the year by soil seepage and spring lines.

204. Rainfall will always fall on Mount Kenya, with or without forest because the moist air from the coast cools as it arrives on the mountain and then condenses. It is the fate of the rainfall that is so critical to the seasonal variation in river flow, to the availability of water throughout the year and to the quality of that water. Following deforestation, the soil is exposed and the organic matter in the topsoil is oxidized. Rainfall no longer infiltrates the soil and the soil is eroded by the intense rainfall and run-off, causing storm flow in the rivers during the rainy season, and therefore low dry-season river flow as a result of the low infiltration.

Links between Poverty and Environmental Degradation

205. Despite the high potential of the area, poverty is widespread and worsening, and few coping strategies are available to the poor. Some of the main problems include:

(a) Shortage of land for agriculture linked to high population and plot fragmentation, which has lead to the cultivation of steep slopes, riverbanks, and wetlands – with environmental consequences in terms of soil erosion (loss of top soil, declining soil fertility, and loss of water catchment capacity leading to lower dry season flows and flooding during wet seasons);

(b) Loss of coffee and dairy farming incomes linked to the loss of services provided by parastatals in these industries, with the result that the farmers have opted for other activities such as illegal harvesting of trees in the forest for sale and growing marijuana in the forests;

(c) The illegality of uprooting coffee, which has left many families with little land on which to diversify;

(d) Lengthy procedures for obtaining water abstraction permits results in many people simply extracting water without permits;

(e) Unregulated water use for irrigation in the middle catchment areas has deprived the communities in the ASAL areas of water which they need for their livestock and which could be used for intensifying agricultural production. In response the farmers resort to opportunistic activities such as charcoal burning which destroys the vegetative cover and causes accelerated soil erosion which further reduces land productivity;

(f) Sale of subsistence crops at harvest time leaves many families vulnerable for several months before the next harvest; and

(g) Lack of markets for farm produce in general, so that farmers are not earning income which could be invested in their farms, and they use inappropriate technologies resulting in further soil degradation.

206. **Relationship between poverty and environmental degradation**. At the core of NRM for farmers in the smallholder sector are several land and water issues that affect, and are affected by, poverty and the local socio-economic situation. Poverty is associated with low educational and limited knowledge of sustainable agricultural methods, so that current practices are unsophisticated and extractive. The lack of soil conservation structures on even the slopes of the least gradient leads to soil erosion and concomitant siltation in the rivers. Water storage structures are uncommon as farmers lack capital for corrugated iron, cement, plastic, etc. Loss of soil fertility reduces crop yields; and the absence of soil conservation structures reduces infiltration of rain and therefore soil moisture content, which shortens the growing season (in areas where rainfall is seasonal). Loss of biodiversity and reluctance to plant trees (also linked to land ownership issues) reduces the availability of firewood and non-timber forest products such as fruit and medicine.

207. All of the above have resulted in lower yields and loss of income, which has had two major impacts: (a) considerable human pressure on the Reserve as local communities turned to the natural resources of the mountain to supplement their livelihoods; and (b) breakdown of socio-cultural practices and traditions conducive to conservation. These are the principal driving forces of illegal activities in the National Reserve such as logging, forest encroachments and wildlife poaching.

Land Degradation: Threats to Soil and Water
Agricultural Areas

208. There are two main environmental problems in these areas:

(a) **Inappropriate agricultural practices**, leading to soil erosion and to declining soil fertility and high silt loads in rivers, as well as loss of the ecosystem service of water catchment resulting in lower low season water flows and higher incidence of flooding during high season flows; and

(b) **Uncoordinated and excessive water abstraction** for agricultural production close to water sources. In the coffee zone, high levels of abstraction from the rivers means that more water is taken out of the rivers than flows into them. Under natural vegetation, soils in the coffee zones would have been year-round contributors of water to the rivers. Likewise, the tea zone remains a net contributor of water because of the higher rainfall and the lower levels of water abstraction. While water abstraction is the main cause of low-season declining flows, it is estimated that about 50% of the water abstracted is wasted or not used, but it is not returned to the rivers.

209. In other words, the area outside the National Park and National Reserve also plays a critical role in water catchment and release, and is currently the principal contributing factor to the process of land degradation through soil erosion. In fact, the high silt load in the rivers coming off Mount Kenya in the agricultural areas is an indicator of the degree and extent of soil erosion. It is estimated that in 1965 the Tana River carried 250 000 tons of sediment into the Indian Ocean. By 1986, it carried

approximately 2.5 million tons, a tenfold increase. Extrapolation of these figures might give an estimated 4 million tons of sediment being carried by the Tana River in 2001.

210. The flow of water during dry periods in the rivers coming off the mountain has been declining, and this is principally a result of over abstraction of water in the higher potential agricultural areas surrounding the National Park and Forest Reserve. Thus, the availability of water for agriculture in the lower lying ASAL areas during the dry season is insufficient to support agriculture, Combined with the issue of declining low-flow during dry period is the issue of the extraordinary silt load of these rivers, resulting in loss of topsoil, which reduces soil fertility and lowers agricultural production.

211. **Rivers in the agricultural areas**. About 50 streams flow from Mount Kenya and pass through the tea and coffee zones. These join larger tributaries (called rivers in the Kenyan context) varying between 5 and 15 m wide, with about 60% of these rivers eventually flowing south and east into the Tana River. They carry with them some silt from the cleared areas within the National Reserve but pick up a much heavier load of silt (and pollution) from the tea and coffee zones as a result of unsustainable agricultural activities.

212. **Agriculture-water link.** Problems of agriculture and water are inextricably linked: as farmers abandon traditional non-irrigated crop production in favour of cash crops such as horticulture, demand for irrigation increases. Farmers do not yet view or value river water as a finite resource and downstream users suffer the consequences of over-abstraction upstream because dry season river flows are falling. The end result is that the availability of water for the ASAL areas, where the end-users (the poorest and most vulnerable target groups) live, is insufficient to meet demand. Given this scenario, agricultural intensification in these areas becomes almost impossible.

213. The availability and quality of river water is also declining because of the breakdown in the control and regulation of water abstraction from rivers. Only about 10-20% of water abstractions are legal; existing water permits stipulate a maximum offtake rate, which is neither enforced nor enforceable because all the water guards have been retrenched. The current situation is that the greater the offtake the cheaper the water, so inevitably water abstraction is being maximized. District Water Offices do not have up-to-date information on water projects under their jurisdiction. The absence of data cannot be a sound basis for planning of water resource development.

214. As rivers are no longer closely monitored, a ‘free for all’ situation is developing whereby no one is concerned about downstream users. The main constraints to proper water management that were identified in the area are: (a) uncontrolled water abstractions that make planning of water resource management difficult; (b) inadequate capacity of the Water Department to regulate and control water use in rivers; (c) lack of District and local water management plans; (d) weak collection and analysis of water data; (d) the need to transfer water over long distances due to the steep terrain; and (e) pollution of rivers from urban centres, leading to poor-quality water downstream.

215. The rules relating to land and water management, such as those restricting cultivation near watercourses or on slopes, are not adhered to owing to an increase in the demand for land for cultivation, a situation that is not likely to ease in the near future. While changing land-use need not necessarily lead to environmental degradation, the current situation is that those living in the tea and coffee zones are engaging in activities that are detrimental to the quality and quantity of river water. The cause and effects of these activities are presented below:

Table 4. Causes and Effects of Land Degradation

Cause	Physical Effect	Economic Effect
Inappropriate agricultural practices	Soil erosion; loss of top soil; declining soil fertility	Declining crop yields; higher silt loads in rivers
Increased deforestation	More run-off into rivers	Increased storm flow and flooding
Cultivation of steep slopes	Soil Erosion Silting of rivers	Loss of soil fertility Damage to hydroelectric generation
Cultivation of stream banks	Soil Erosion Silting of rivers	Downstream sedimentation build-up Loss of fertility
Cultivation of wetlands	Destroys water storage	Downstream water shortage
Uncontrolled and excessive water abstraction	Reduced river flow	Minimal or no water for downstream users; increasing conflict over water
Limited discharge control from coffee factories	Highly toxic waste runs into rivers	Kills fish and aquatic life
Urban centres with no discharge control	Organic and chemical pollution of rivers	Disease problems
Inadequate road cutting protection	Silting of rivers	Damage to hydroelectric generation

Mount Kenya National Park and Reserve

216. **Unregulated and excessive water use** for agricultural production has reduced the reliability of downstream water supply, impacted on riparian environments and decreased water quality. Many abstractions are located in the National Forest Reserve, but the amount of water taken is not monitored nor regulated in line with the quantities approved. Abstraction applications are approved on the basis of availability or balance of water. However, no account is taken of long term hydrological records to determine the natural water resource, and the high prevalence of illegal and over abstraction means that the total approved allocation grossly under estimates actual abstraction. KWS and Forest Department are expected to approve new abstraction applications within the National Reserve yet they have no role in ensuring that a more effective method of water allocation is adopted.

217. **Illegal activities** in the National Reserve such as logging of native trees and wildlife poaching have lead to a local decrease in targeted populations. Heavy poaching of important timber trees has greatly reduced populations and regenerative capacity of such tree species. Some of the most targeted tree species are Cedar (*Juniperus procera*), Wild Olive (*Olea europea*), East African Rosewood (*Hagenia abyssinica*) and Camphor (*Ocotea usambarensis)* Camphor tree populations have declined to a level where it is now a locally threatened species. Illegal clearing of forests for agriculture and charcoal burning, have reduced vegetation cover and left bare ground vulnerable to erosion and weed invasion. Human encroachment into forest areas has reduced vegetation cover and wildlife habitat. Degraded indigenous forest area currently covers about 4,800 ha. Wildlife poaching remains a threat to the unique biodiversity of Mount Kenya, and rare, threatened and commercially valuable species are particularly vulnerable. Buffalo, for example, are commonly hunted for their meat which is sold locally below the price of beef, mutton or goat meat.

218. **Breakdown of the shamba system.** Non-Resident Farming System (NRC) or shamba system is a form of agroforestry whereby farmers cultivate short rotation crops on forest land for three or four years while they tend intercropped tree seedlings. Once the trees have grown sufficiently to shadow the agricultural crops the farmer then moves off the allocated plot and is eligible for another cleared forest plot. Since the early 1980's the scheme has been mismanaged and by 1999 75% of areas under the shamba system had not been replanted. Farmers took up residence on their shambas and expanded their farms illegally, exploited forest areas by burning wood for charcoal and snaring wildlife to sell as bush meat. While some areas have been replanting since 2000, about 8,000 ha (both indigenous and plantation forests) remain unplanted.

219. Past forest policies and legislations have largely excluded involvement of communities. As a result, forests have been viewed as "government forests" as communities derive few direct benefits from the resources. Application of the relatively new enabling policy in favour of community involvement in natural resource management will require improved awareness of rights and responsibilities, enhanced institutional capacity and a shift in emphasis from regulation to participatory management.

220. **Repeated wildfire** has altered structural and species diversity and encouraged establishment of invasive species. Fires have degraded large areas of both plantation and indigenous forest areas, particularly on the drier western side slopes of the mountain. The fire-prone areas of Mount Kenya stretch in an arc across the north side of the ecosystem from Gathiuru on the west to Meru in the east. Most fires are deliberately lit, reportedly started by honey hunters, arsonists or from land preparation activities within and outside forest areas. Some fires have occasionally spread to areas difficult to access such as the moorland in the high altitudes where they smoulder for days and are difficult to extinguish.

221. **Human/wildlife conflict.** The close proximity of the human settlements to Mount Kenya National Forest Reserve results in continuous human/wildlife conflicts in surrounding farmlands. Animals raid croplands, causing loss of production, damage to infrastructure, and injury or death to people and even the wildlife. Elephants cause the most damage although the buffalo, primates and wild pigs also contribute to crop damage. People now inhabit traditional wildlife migration corridors and so wildlife movement is restricted. Elephants and buffaloes also destroy plantation trees though debarking, uprooting, horning and trampling. Fencing of farms significantly reduces conflicts and is favoured by communities. However, it contracts wildlife habitat and the longer term impacts on wildlife populations and their habitat is unknown. While conservation and protection of wildlife is highly important, the food security and livelihoods of people is paramount and so equitable compromises to resolve human/wildlife conflicts must be explored.

ANNEX 6: MOUNT KENYA MANAGEMENT PLAN

Introduction

222. The primary objective of this annex is to describe the relationship and complementarities between the GEF Alternative of the Mount Kenya East Pilot Project for Natural Resource Management (MKEPP) and the draft Management Plan for the Mount Kenya Ecosystem 2002-2007.

223. The Draft Management Plan for the Mount Kenya Ecosystem 2002-2007 will essentially provide a framework for design and implementation of the activities of the GEF Alternative in the National Park and Reserve, which in turn will compliment and support the draft Plan by implementing some components, in entirety or in part. The experiences and lesson learned from the GEF Alternative will provide implementers of the Management Plan with valuable information on the effectiveness of area-specific strategies and guide management approaches to address pressures and impacts on conservation and sustainable use of natural resources in the Mount Kenya Ecosystem.

Draft Management Plan for the Mount Kenya Ecosystem 2002-2007

224. The Management Plan developed with assistance from UNESCO, was completed to "final" draft in November 2001. The draft *Management Plan for the Mount Kenya Ecosystem 2002-2007* was completed to "final" draft in November 2001, and was debated during a workshop in April 2002. However, the Plan has not yet been implemented because it lacks support from all stakeholders. Consequently, the draft Management Plan is currently under revision by the Joint Management Taskforce for management of Mount Kenya, which consists of FD and KWS officers, and is expected to be validated by the end of the year.

225. The pending draft Management Plan 2002-2007 covers the entire Mount Kenya ecosystem including the partly overlapping areas proclaimed as National Park, Biosphere Reserve, World Heritage Site and National Reserve (formerly Forest Reserve), and also the transition zone, which surrounds the Reserve within a 5 km radius. The geographical area for activities under GEF Alternative cover these same zones, however, as a sub-component of the Mount Kenya East Pilot Project for Natural Resources Management, some monitoring and evaluation elements extend further into water catchment within agricultural areas.

226. The vision and rationale of the draft Management Plan for the Mount Kenya Ecosystem is to provide objective guidelines to protect the functioning of the ecosystem. It summarizes that: (i) the Afro-alpine wilderness on Mount Kenya and the restoration of the water catchment function and the related ecological processes of its forests are the duty of the KWS; (ii) in the National Park, springs and water courses should be protected and indigenous closed canopy forests be rehabilitated; (iii) in the buffer (Reserve) and transition zones, indigenous and, to a lesser extent, plantation forests should be rehabilitated through mechanisms that involve community participation.

227. The draft document contains detailed management chapters (modules) and budget schedules on:

- Infrastructure and communication: airstrips, access roads, forest roads, bridges and footpaths need to be rehabilitated or newly constructed; the Mount Kenya radio net is to be upgraded and Park headquarters need electricity permanently;
- Security and protection: additional staff is required to effectively protect the Mount Kenya ecosystem; in addition, equipment and vehicles are to be procured;
- Expansion of Forest Co-ordination Unit at KWS Headquarters;

- Afforestation: the restoration of closed canopy montane forest on the eastern slopes of Mount Kenya is among the top priority management actions in the coming years;
- Community awareness: in the long run KWS aims to co-operate with the surrounding communities concerning the management of certain well-defined areas within the buffer and plantation zones;
- Research and monitoring: a central system where data from past and ongoing research on Mount Kenya are stored and analysed needs to be developed urgently;
- Mountain rescue.

Complementarities between MKEPP activities and the draft Management Plan

228. Essentially, the GEF Alternative will undertake activities relating to all issues identified in the draft Plan, with the exception of re-introduction of wildlife species. These activities will make significant contributions to and accelerate the process of implementing the draft Plan by operationalising and implementing some components, in entirety or in part, and supporting enabling mechanisms to undertake participatory management of natural resources. The activities are summarised below, while the corresponding title as described in the draft Management Plan (MP) follows in brackets.

229. **Watershed Management.** The draft Management Plan iterates that decisions on water use are made arbitrarily without the benefit of reliable hydrological and meteorological data. The activities under the GEF Alternative will develop a strategy and set of guidelines for water resources management within the National Park and National Forest Reserve. It will develop decision support tools to evaluate river water availability for allocation and to ensure that abstractions are consistent with allocation decisions. MKEPP will also restore the degraded system of rain gauges around the mountain.

230. **Forest Rehabilitation** (Restoration of degraded forest areas in MP). Restoration of degraded forest areas is a major activity of both the GEF Alternative and the draft Management Plan. Some 2 780 ha of forest area in the National Reserve will be replanted over four years. The MKECI expects that communities will play a central role in rehabilitation of degraded forests by growing tree seedlings and providing labour for planting and maintenance. It will also provide communities with new or improved skills, and provide employment and an alternative source of income, thereby reducing exploitation of forest resources.

231. **Research, Monitoring and Information Management**. The draft Plan highlights the urgent need for a central data storage system for past and ongoing research on Mount Kenya. The GEF Alternative will develop a comprehensive ecological monitoring system to be coordinated by the existing KWS Mweiga Research Station in Nyeri. Kenya. Mweiga Research Station will focus long term research and monitoring efforts on the Mount Kenya Ecosystem and also develop systems to ensure that ecosystem publications relevant to Mount Kenya are stored, accessible and disseminated to the scientific community and decision makers.

232. In terms of ecosystem surveys, the GEF Alternative will: assess changes to forest diversity and ecological condition; research strategies to improve germination and establishment success of indigenous tree species; monitor the impact of wildlife barriers on target species; monitor water abstraction rates and rainfall; and assess socio-economic attributes of communities participating in the activities. Most of the ecological studies are listed in the draft Management Plan.

233. **Ecosystem Management Capacity.** (Security and protection in MP). Both the GEF Alternative and the draft Plan recognize the importance of improving infrastructure and communication systems to increase forest protection from illegal activities. The GEF Alternative will rehabilitate forest roads

and bridges, procure vehicles and equipment, upgrade communication system, and provide forest ranger training by financing supply to the National Park. This includes equipping six forest stations with fire fighting and detection equipment.

234. **Participatory Forest Management** (Capacity building of KWS and communities under several sections in MP). The GEF Alternative and the draft Plan identified that KWS and FD require assistance to adjust infrastructure and skills in response to changed management responsibilities as a result of the gazettement of the National Reserve and new forest policy. To assist communities, KWS and FD to develop partnerships to equitably manage forest resources, the GEF Alternative will pilot participatory forest management in Irangi Forest in Embu and Hombe Forest in Nyeri. This will involve sensitization and training in PFM processes and the development of a strategic management plan.

235. The draft Management Plan notes that visitor accommodation on the mountain has never been planned from the perspective of tourism development across the ecosystem as a whole. The GEF Alternative will fund a study on tourism management planning in Mount Kenya with the view to increase Park revenue, which will be reinvested into Park management.

236. **Human/Wildlife Conflict Resolution** (Fencing in MP). The GEF Alternative will support KWS and communities to implement sustainable strategies to reduce crop damage caused by wildlife. Like the draft Management Plan, the GEF Alternative will focus on "hotspots" of conflict along the National Reserve-settlement boundary. The major area of conflict is around the north-western slopes due to the proximity of settled areas to the forest, coupled with the existence of elephant migratory routes. Communities have expressed keen interest in working with KWS to devise sustainable solutions to conflicts, mainly in the form of erecting community-maintained electric fencing.

ANNEX 7: ONGOING DONOR INTERVENTIONS

237. The **Mount Kenya Donor/Partner Cluster Forum** was formed in June 2001 to provide a platform to foster collaboration and cooperation among agencies and partners who are concerned about the conservation of Mount Kenya Ecosystem. The Forum's mission is "to enhance biodiversity conservation, harmonise natural resource management and optimise resource use in the Mt. Kenya ecosystem through sustainable forest and wildlife management, tourism development, biodiversity conservation, agro-forestry, education, research, information sharing, community participation, capacity building and policy and legislative development". Its membership is varied and includes UN agencies (UNDP, IFAD, UNEP, UNESCO), other donors (USAID, WB, DFID, etc.), public sector institutions (KWS and Forest Department), NGOs/foundations (Kenya Forestry Working Group, Mt. Kenya Bill Woodley Trust, William Holden Wildlife Foundation,) as well as private sector operators (Serena Hotels, Alliance Hotels, Kenya Airways, etc.). The Forum is funded as a project under COMPACT and KFWG has been contracted to coordinate and act as Secretariat.

IFAD/GOK ON-GOING PROJECTS

238. The **Central Kenya Dry Areas Smallholder Project (CKDAP)** is a seven-year project which is in its third year of implementation. The total project cost is about USD 18 m, of which USD 10.9 m is the loan from IFAD, USD 4.1 m from BSF and USD 2.6 m representing from GOK and the remaining USD 0.4 m is the beneficiary contributions. The main objective is to contribute to poverty reduction and vulnerability to diseases and hunger of the poor rural communities, through the provision of social and physical infrastructure and the improvement of household incomes. Its geographic coverage includes the dry areas of five districts on the western side of Mount Kenya, with Nyeri and Kirinyaga sharing a boundary with the National Reserve. The project consists of six components: (i) primary health care and domestic water supply, (ii) water development services, mainly dealing with water for kitchen gardens, (iii) agricultural services, encompassing both drought resistant crops and livestock, (iv) group development services, and (vi) project management and coordination. This project also includes funds which were allocated under Poverty Alleviation credit financing but the modalities are yet to be developed.

239. The experienced gained under the CKDAP relative to the menace posed by wildlife, and along with the learning during the project design process for the Mt Kenya East Pilot Project for Natural Resource Management on water issues have been the factors that have lead IFAD to prepare the Environment Conservation Component to be financed by GEF.

OTHER DONORS/PROJECTS INTERVENTIONS

240. The **Community Management of Protected Areas Conservation (COMPACT)** project started in Kenya in 2000[28] with the objective to foster the protection and conservation of biodiversity of the Mt. Kenya ecosystem, after the National Park and surrounding natural forests in the reserve were listed as World Heritage Site. The project is financed by GEF Small Grants Programme (GEF/SGP) and the United Nations Foundation (UNF) and provides a demand-driven facility whereby NGOs, CBOs and local communities can access funds to finance initiatives and small projects, up to a maximum threshold of USD 50,000, aimed at biodiversity conservation of the Mount Kenya ecosystem. After three years of implementation an external evaluation showed positive results of the first phase, hence GEF/SGP committed US$ 300 000 for the first year of the second phase, which started in late 2003 and is due to last for 3 years. Through GEF/SGP, with support of

[28] Kenya is one of the six countries where COMPACT is implemented, the others being Tanzania, Philippines, Belize, Mexico and Dominican Republic.

United Nations Foundation (UNF), GEF is supporting NGOs, CBOs and local communities with funds to finance initiatives and small projects aimed at biodiversity conservation of the Mount Kenya ecosystem. In an effort to address human/wildlife conflict, COMPACT is funding construction of a 14 km solar electric barrier fence in the Mukundu-Mpuri area. Since schools deplete about 2 ha of forest per year, COMPACT is also funding the Renewable Energy Assistance Programme to assist 20 schools around Mount Kenya by combining the replanting of wood lots with the promotion of energy efficient stoves in their kitchens. In addition, Christian Community Services the development arm of the Anglican Church of Kenya has support from through COMPACT to promote forest conservation and Bee-keeping Project in the five districts around Mount Kenya.

241. The **Forest/Range Rehabilitation and Environmental Management Strengthening (FORREMS)** is a four-year programme (2003-06) funded by USAID estimated to cost USD 1 m. The project seeks to (i) strengthen GOK institutions involved in natural resource management, namely FD and KWS, through capacity building, technical assistance and material support and (ii) support improved forest management, rangeland conservation and environmental management. Its geographic focus includes the Mukogodo Division in Laikipia District, the Arabuko Sokoke Forest in North Coast and some divisions in the north eastern area of Mount Kenya, namely Naromoru, Gathiura and Nanyuki in Nyeri District and Mucheene, Ontulili and Meru in Central Meru. Under the auspices of FORREMS, a technical task-force for MountKenya ecosystem management grouping all relevant stakeholders from FD and KWS (namely PFOs, DFOs and KWS Wardens) has been created in order to coordinate their actions in the area. The bulk of the money will be spent for training of the newly recruited forest guards (about 1,000) and some capacity building at headquarter level .

242. The **Biodiversity Conservation Programme (BCP)** is an EU-supported five-year (2000-05) conservation programme estimated at USD 3.5 m. Its objective is to enhance sustainable biodiversity conservation in priority areas through local initiatives, focusing on four main issues: (i) awareness creation on biodiversity conservation, (ii) development of enterprises that promote sustainable use of biodiversity, (iii) management/reduction of conflicts between human and biodiversity and (iv) mitigation of threats and negative impacts to biodiversity. The project's geographical coverage is national, with specific focus on: conservation and dispersal areas within neighbouring parks and reserves, crucial watersheds, important water systems (e.g. rivers, marine and lakes), unique landscapes of high touristic value. The project is a demand-driven, flexible funding mechanism that provides financial and technical assistance to support biodiversity conservation efforts by local stakeholders, similar to COMPACT, although it does not restrict itself to NGOs, CBOs and local communities. BCP has also financed erection of a 9 km solar electric fencing in Sagana Settlement Scheme to mitigate conflicts between people and wildlife.

243. The **Kenya Forests Working Group (KFWG)** was formed in 1995 by key stakeholders to spearhead forest conservation in the country. It is a sub-committee of the East African Wildlife Society. KFWG's main aim is to facilitate the exchange and sharing of information and experiences by members and identify strategies for intervention and to co-ordinate actions related to forests, in order to improve the status of Kenya's forests and increase the benefits from the sustainable use of the forests through sound management and conservation practices. KFWG's main activities are: (a) forest advocacy (proactive and reactive); (b) Information gathering, verification and dissemination including providing alternatives to unsustainable forest utilization methods; (c) demand driven assistance to communities as guidance/advice as well as for leveraging of funds for implementation of micro-initiatives; (d) developing/facilitating innovative ways of funding for forest conservation. In the Mount Kenya Area, KFWG has been particularly active together with KWS in raising awareness on the state of destruction of the forests through aerial assessments conducted in 1999. As a continuation of this initial monitoring effort, KFWG is now undertaking, with support from the Dutch Embassy, a project that will monitor forest changes in Kenya's five "water towers", including Mt. Kenya, mainly through the study of satellite imagery.

244. The **Centre for Training and Integrated Research for ASAL Development (CETRAD**). This is an initiative between GOK (Ministry of Water Resources Management and Development) and

the Centre for Development and Environment, Institute of Geography, University of Berne, Switzerland. The programme has been active since 1984, and its main objectives include the analysis of changes in natural resource use systems and development of improved tools and approaches to strengthen the negotiations and planning processes in the ecological system in the Northern slopes of Mount Kenya as well as in Ewaso Ngiro Basin.

245. **The Bill Woodley Mount Kenya Trust**. The focus of the Trust is on biodiversity conservation in the National Park and Reserve. The activities supported include de-snaring of wildlife, support for women groups to establish indigenous tree nurseries and wildlife fencing. The Trust has funded the erection of 20 km solar electric fence. The Trust has also been effective in mobilising funds from the private sector (large scale farmers) to construct a 9 km wildlife corridor between Mount Kenya and Ngare Ndare Reserve to reduce contact and conflict with smallholder farmers and pressure on forests.

246. **Academic Institutions**. There are a number of highly specialised studies and long-term ongoing efforts on specialised specific topics because of the international and national interest in conservation issues for Mount Kenya. For example, the monitoring of elephant populations and their migratory patterns have been the subject of a number of Phd thesis, and the conservation and repatriation of the bongo antelope has been carried out by an American University. Many of these studies provided excellent baseline information for future monitoring relative to biodiversity resources in the National Park and Reserve.

ANNEX 8: RESEARCH, MONITORING AND INFORMATION MANAGEMENT

247. **Overall project objectives.** The overall project objectives of the Mount Kenya East Pilot Project for Natural Resource Management Project is to reduce poverty through improved food security and income levels of farmers and rural women by promoting more effective use of natural resources, improve access and management practices for water resources and introduce better farming practices for sustainable land use and water resources. The project seeks to contribute to the government's poverty reduction and environmental conservation strategies. The project's immediate objective is to enhance equitable use of natural resources with particular focus on environmental conservation. The project's immediate objective is to enhance equitable use of natural resources with particular focus on environmental conservation. The project addresses causes and impacts of environmental degradation. Thus, the project includes activities for poverty reduction, as reduced incomes have contributed to natural resource mining in the project area, and these will be funded to a greater extent by GOK/IFAD as a rural development project. GEF will finance ecosystem management activities in protected areas of Mount Kenya which contain rich biodiversity and fauna and flora species of global conservation significance. Thus, project monitoring and evaluation should ensure the effective tracking of physical and financial progress in order to achieve the short-term project goals at the same time put in place a mechanism to track the impact of the project activities in the long-term.

248. **Objectives of the Research, Monitoring and Information Management programme.** There are two main objectives; to: (b) measure project implementation progress both physical and financial; identify and track project risks to provide early warning of both internal and external risks and facilitate adaptive management responses and (b) measure project impacts (bio-physical and socio-economic) and progress towards achieving overall project and component objectives. To this end, the programme needs to have a flexible management and assessment approach to allow adjustment in response to changing conditions and emerging issues.

249. Appropriate quantitative and qualitative indicators and data collection methods will be further refined during the early stages of project implementation once participating communities have been selected and site-specific activities have been agreed between PMU staff and the EICC and implementing partners and participating community groups. The success of the monitoring programme in delivering the desired level and accuracy of information will be regularly evaluated, especially in the early stages of the programme. The programme will be further refined and tested during PY1 and will be adjusted as necessary throughout the life of the project. If the indicators or the spatial and temporal sampling regimes are inadequate to detect change, then the programme will need to be modified.

A PROJECT MONITORING AND EVALUATION

250. The objective of monitoring and evaluation is to assist all project participants in assessing project performance and impact, with a view to maximizing both. The objective and purposes of the project, and the list of its planned outputs, have provided the basis for this monitoring and evaluation plan. The following will be monitored:

251. **Project execution**: Internal monitoring will focus on management and supervision of project activities, seeking to increase the efficiency and effectiveness of project implementations. It is a continuous process, which will collect information on both physical and financial progress on implementation of activities programmed in the annual, half-yearly, quarterly and monthly workplans. Following the monthly, quarterly, semi-annual and annual assessments, proposals will be made on how to improve performance after comparing estimated actuals (AWPB) vis avis the actuals (achieved targets). The assessment will be the direct responsibility of the the PMU MISO, PMU environmental Officer and the EICC in collaboration with the PMU Project Manager:

252. **Project performance**: Internal evaluation will assess the delivery of logframe outputs, both in quantity and quality. Annual internal evaluations are carried out by the UNOPS Supervision Missions. These evaluations will be included in the Annual Reports submitted to the Project Steering Committee. Annual Financial audits will be carried out by UNEP in collaboration with the GOK (Controller and Audit for General or a external auditor selected by the government with approval of IFAD/UNEP).

Monitoring and Evaluation Plan

253. The purpose of monitoring is to review project activities continuously with respect to management and implementation of activities in order to ensure that the work programme progresses as planned. This will allow all implementers to maximise efficiency in meeting objectives. The purpose of evaluation is to determine the relevance, efficiency, effectiveness and impact of project activities in terms of their impact, both during the project lifetime and in future.

254. Monitoring will be conducted using participatory approaches, particularly at local and district level, involving the implementing partners Forestry Department (FD), Kenya Wildlife Service (KWS), Non-Government Organizations (NGOs) and Community-Based Organizations (CBOs) and the Project Management Unit (PMU). District officers from GOK technical services will be trained to conduct participatory monitoring using simple field techniques and household surveys with local communities. The more technical aspects of measuring carbon sequestration and mapping the diversity of forest ecosystems will require targeted research in order to determine the impacts of project activities on these important dimensions. These activities will be sub-contracted to competent local organisations.

255. Internal evaluation will assess progress toward achieving logframe outputs and targets. These evaluations will be carried out by the PMU and reported annually. Annual financial audits of GEF activities will be carried out by UNEP in collaboration with the PMU/EICC. Project performance will mainly report on quantitative outcomes while impact indicators will assess both quantitative and qualitative outcomes

Indicators of Project Execution

256. External mid-term evaluations will be effected after two years of project implementation. These will be commissioned from external consultants by UNEP in consultation with the GOK and IFAD. These evaluations will be preceded by annual technical audits that will serve as basis. The delivery of project outputs will be based on the Logframe and the evaluation will be carried out by the KWS with support from MISO from PMU. These will be consolidated at PMU level as the Project Annual Report which will be submitted to PSC, UNEP and IFAD. A summary of the project performance indicators is shown in **Table 1**.

Table 1: Monitoring and Evaluation Indicators for the Project Components

MKEPP component (& donor)	Key indicators	Impact assessment methods (and sources)
Water resources planning and management (IFAD/GEF)	• Develop 7 sub-basin management plans and increase downstream dry season flow by 20% at end of project period[2] • All new abstraction (4/dist/year) meet set guidelines and total consumption[2] and 50% of illegal abstractions regularized by end of project period[2] • 463 improved water projects developed [2] • 13 RWUAs established and actively managing water resources[2] • 260,000 of people tarrgeted[2] • 1 set of Guidelines for improved resource allocation[1] • 1 document outlining decision support tools developed[1]	• River flow data (WRMA) • No. of applications and approvals (WRMA) • Field survey of river abstractions • Water use on farms • Farm surveys • RWUA/PMU reports • " • CBO and HH surveys (PMU) • " • Guidelines approved and implemented • No. of rivers for which streamflow and water quality data is available (WRMA)
Soil conservation (IFAD)	• 5 000 farmers adopting improved soil management practices[2] • 15% reduction in soil erosion [2] • Soil physical and nutrient condition improved by 25% by end of project period[2] • 25% increase in crop production[2] • 1 000 Ha in non-protected areas re-afforested, 500 trees/ha targeting 2 500 farmers[2]	• Farm and plot monitoring surveys (KARI) • FFS attendance and follow up farm surveys • Visual and photographic assessments • Field surveys (farmers/PMU)
Environmental conservation (GEF/IFAD)	• Replanted 2 800 ha of degraded forest area , 1 950 ha of indigenous forests and 850 ha plantation forests and ensure 90%survival of planted seedlings, thus rehabilitate degraded protected area [1] • 1 000 ha degraded areas rehabilitated outside protected areas [2] • 500 000 people adjacent to the Forest Reserve in 5Km diameter and another 300 000 in the next 5Km [1] • 85% reduction in frequency of illegal activities[1] • 26,000 households adopt energy-efficient technologies[2] • 50% reduction in area affected by wildfire[1] • Approx 397 km of wildlife barriers installed and maintained[1] • Six operational forest-specific management plans developed and implemented[1] • Operational ecological monitoring and information management system[1] • Two participatory forest management strategic plans developed and implemented[1] • Mweiga Research Station strengthened for Ecosystem monitoring [1] • 1 Research outpost established[1]	• Remote sensing (KWS and partners) • KWS/NGO/PMU reports and field surveys • PMU reports • CBO surveys • Occurrence reports (KWS, FD), aerial surveys • HH surveys (PMU) • Occurrence reports (KWS, FD) • KWS, CBO and NGO reports • Baseline and end of project survey of elephant pop[n] and habitat (KWS) • KWS/FD reports • Mweiga Research Station reports • KWS/FD/KEFRI and CBO reports
Community empowerment (IFAD/GEF)	• 260,000 people receiving tangible benefits from project supported activities [2] • Improved livelihoods and food security [2]	• KWS/KEFRI/CBO reports • Community and HH surveys
Project management (IFAD/GEF)	• PMU appointed and operating[2] • Financial systems operational[2] • Workshops held[2] • Baseline surveys conducted and M&E system implemented[1, 2] • Progress reports submitted on time[1, 2]	• PMU Internal Review and reports • PMU and Mweiga Research Station Reports

Notes: [1] indicates GEF-funded monitoring; [2] indicates IFAD-funded monitoring

B PROJECT IMPACT EVALUATION

257. Research, Monitoring and Information Management" programme will aim at assessing global benefits of biodiversity conservation and carbon sequestration. Baseline and impact surveys will be conducted for each of the Project's outputs. In terms of assessing the two major global benefits that will be generated by the GEF activities – biodiversity and climate change (carbon storage and sequestration): **biodiversity** assessment will be pitched at the ecosystem level, assessing the distribution and condition of forest types; and **carbon sequestration** estimates will concentrate on agricultural lands where the most significant changes are likely to occur as a result of improvement in soil and water management practices and promotion of farm agroforestry and energy-efficient technologies. Community and social indicators will measure effectiveness in engaging communities in participatory forest and water management activities and receipt of tangible benefits derived from project activities which contribute to improved livelihoods and food security.

258. Monitoring impacts of the MKEPP will require coordination of implementing and external agencies in data collection, collation and reporting. The PMU will contract an M&E specialist for three months in year one and a further one month in year two to assist in the design and implementation of the monitoring programme. The specialist will ensure: (i) integration of MKEPP and GEF Research, Monitoring and Information Management activities; (ii) generation of synergies where IFAD- and GEF-funded activities overlap (e.g. carbon sequestration, farm agroforestry, community empowerment); and (iii) that monitoring activities of project components are timely, coordinated, and provide more accurate assessments of project impacts.

Indicators of Project Impact:

259. A range of indictors will be used to assess the various environmental and socio-economic aspects of the project components. The indicators will be identified through a participatory process in order to achieve a locally valid assessment of project impact and ensure ownership of the project outcomes. Selection at local level will require a combination of technical expertise and local knowledge. The indicators to be selected must reflect:- (a) status of natural ecosystems, their conservation and capacity for production of goods and services, (b) evidence of positive changes in the management and use of biodiversity and natural resources, and (c) improvements in productivity and reduction of poverty. The proposed potential impact indicators by project activity are presented in **Table 1**, and will focus on measuring project results in three broad areas, namely socio-economic impact, monitoring water flows and quality and ecological impact.

Schedule for Determination and Implementation of Indicators

260. In addressing project implementation problems in Kenya, IFAD has established that substantial effort is needed and hence is undertaking a two-year initiative to improve planning, budgeting, reporting and monitoring by PMUs and the government district technical staff. This work started in June 2004 and will be implemented over 2 fiscal years with a view to assess and modify the approach in light of the experience gained. The approach adopted is in four phases:

Phase 1. Review the project Logframe with PMU staff and government technical services with a view to validate the logframe and proposed indicators.

Phase 2. Agreeing upon roles and responsibilities in light of the above ownership building activity.

Phase 3: Agreeing upon the content and approach for conducting baseline study in light of indicators validated by PMU and government technical services.

Phase 4: Develop tools including baseline study report, collection of impact information and analyze such information as part of annual performance review of the project. The output of this activity will

be to identify priority indicators, record forms, a schedule with timing of data collection and designated responsibilities and notes on consolidation, analysis and presentation of the information in annual performance review workshops and in annual reports.

Phase 5. During MTR (PY4 of IFAD-funded activities and PY2 of GEF-funded activities), carry out a thorough review of the indicators with a view to determine changes that should be introduced and thereafter, routine application of the indicators during the remaining project life.

261. During the process of impact monitoring, indicators will be developed and refined along with modalities and timeframes for monitoring. IFAD has started to determine with the government of Kenya the roles and responsibilities and the content of project reporting and impact monitoring responsibilities. It is expected that during the project appraisal in January-February 2005, when the first part of this work will be nearing completion, it will be possible to develop a full matrix of roles and responsibilities for integrated project reporting and monitoring.

General Indicators for Impact Assessment

262. **Social and Economic Indicators.** Community and social indicators will focus on measuring effectiveness in engaging communities in participatory forest and water management activities, adoption of improved soil and water practices and tangible benefits derived from project activities which contribute to improved livelihoods and food security. Key indicators could include: (a) communities and members (by gender) actively involved in participatory forest and water management, (b) communities involved in and maintaining project initiated benefit-generating activities, (c) proportion of income from non-farm sources including project activities and proportion from traditional sources; farm profits; household income per capita, (d) adoption of improved soil and water management practices, (e) crop productivity; and (f) food security and livelihoods.

263. **Water Resources Indicators**. Monitoring of water resources will focus on: (a) increased availability of water in the rivers and decreased number of illegal abstractions, (b) increase in the quantity of water returned to the rivers after use, (c) quantity, quality and silt load of water flow per catchment and with regard to irrigation, monitoring will focus on increased irrigation efficiency and on reduction of water losses.

264. **Ecological Indicators.** Monitoring of ecological and conservation impact will review overall changes and trends in:- (a) forest diversity, rehabilitation and protection, (b) carbon sequestration in relation to soil condition and management, (c) sustainable allocation and use of water resources; and (d) impact of wildlife barriers on wildlife populations and habitat.

Ecological Impacts of GEF Outputs and Benefits

265. Ecological data collection will involve a combination of participatory field surveys and remote sensing techniques. Ongoing routine monitoring that has been conducted by KWS and FD (e.g. occurrence of fire, poaching and human/wildlife conflict) will provide a baseline against which to assess changes in these aspects of ecosystem management. As required, baseline data for other parameters will be collected during the first year. Other specific indicators will be jointly developed with the baseline as appropriate for site-specific conditions and activities.

266. **Forest Resources Management**. Conservation of Mount Kenya's unique biodiversity is a key **global benefit** that will generate from GEF-funded activities. The objective of forest management output is to improve biodiversity conservation and restore ecological function through activities under three main sub-components: (1) forest rehabilitation, involving active replanting of degraded forest areas; (2) forest protection, which includes surveillance and fire management; and (3) participatory forest management (PFM), initiation of a pilot PFM process for a selected forest; and (4) forest-specific operational management plans.

267. **Forest diversity and distribution**. Since the project is concerned with conservation of biodiversity at the ecosystem level, biodiversity assessment and monitoring will focus on the diversity of forest ecosystems, their distribution and ecological condition. The forest diversity survey will assess trends in canopy cover, distribution and ecological condition of different types of indigenous forests and plantations. The distribution of forest-types can be rapidly mapped using remotely sensed imagery. Given the right imagery and a workable definition of cover categories, this classification can be carried out with high accuracy. A field survey to describe and locate forest types will provide more precise results, with superior classification accuracy. Imagery-based area estimation will not only provide summary statistics, but will also allow description and analysis of the spatial arrangement and fragmentation of forest habitats. Those forest types that are rare, restricted or threatened will be of particular interest.

268. A forest diversity survey will be conducted during the first year of the project and the results will represent the baseline against which future changes will be measured. Appropriate forest diversity indicators would include:- (a) forest area by type and successional stage relative to land area, (b) degree of fragmentation of forest types, (c) complexity and heterogeneity of forest structure, (d) rate of conversion of forest cover (by type) to other uses; and (e) area and percentage of forests affected by anthropogenic and natural disturbances.

269. Given that spatial increases of forest areas through regeneration (either natural or from active replanting) is a long term process, it is highly unlikely that changes and trends in forest canopy cover and distribution will be detected during the course of this project. Thus, KWS and partners will need to access funds to conduct a repeated ground survey and mapping exercise, probably some 15-20 years after project initiation. In the meantime, surveys to evaluate to the success of forest protection measures (see below) will provide short term indications of more general trends in forest condition.

Forest rehabilitation

270. Forest rehabilitation essentially involves strategic replanting of degraded forest areas to restore ecological function and increase species and structural diversity. The primary indicator of success will be the survival of planted seedlings. Seedling establishment success will be monitored through simple participatory field surveys involving communities, FD and/or NGO involved in replanting. Monitoring will occur simultaneously with ongoing weed management activities. Plant attributes that will be measured include density, mortality, species diversity, plant height and diameter, and plant health. Of particular interest will be the effectiveness of strategies to minimize seedling/sapling damage from wildlife and the suppression of competition from weed species.

271. Monitoring will continue until plants reach a growth stage where they are highly likely to continue to maturity. This will vary between species but generally would be at about five years. Obviously, monitoring five years after planting is not possible within the timeframe of a four year project. However, by the end of the project FD should have sufficient resources to undertake periodic rapid field assessments and use this information to assist to optimize success of future replanting programmes.

272. Forest rehabilitation will be a collaborative effort between forest adjacent communities, FD/KWS and selected NGOs. With technical assistance from FD/KWS and NGOs, communities will grow tree seedlings, sell them to FD/KWS or NGOs and assist with planting and monitoring. Thus, communities will directly benefit through selling of trees and labour. In addition, their capacity to market seedlings locally will be sustainable beyond the life of the project. Monitoring the impact of this sub-component therefore will also include an assessment of changes to community livelihoods as a result of benefits derived from forest rehabilitation activities.

Forest protection

273. Monitoring the impacts of forest protection activities will include what are referred to here as surveillance surveys. They will essentially indicate improvement in forest protection measures, including *fire management*, through the collaborative efforts of FD, KWS and communities. Thus, these surveys will directly address forest diversity indicators four and five listed previously.

274. Damage from disturbances or threats such as fire, human encroachment and illegal forest use, will be detectable in the short term. Surveys to assess increases or decreases in the frequency, extent and impacts of these disturbances will be conducted in the first year of the project and repeated in year four. Surveillance surveys will follow the same methodology used in previous surveys conducted by KWS and partners in 1999[29] and 2002[30]. This will build a contiguous and consistent data set and will allow more accurate analysis of longer term trends and facilitation of informed management decisions. The methodology for these two previous surveys was based on time-series satellite image analyses, and repeated aerial and ground surveys. Damages and threats to the forest were classified as follows:- charcoal production, fire occurrences, shamba-system practices, grazing of livestock, logging of indigenous trees: Camphor (*Ocotea usambarensis*), Cedar (*Juniperus procera*), Wild Olive (*Olea europeae*), and East African Rosewood (*Hagenia abyssinica*), logging of other indigenous tree species; and landslides.

275. KWS and FD regularly collect data on illegal forest activities, for example, offences committed against the Forestry Act and number of cases prosecuted. They also record occurrences of fire. These and subsequent data will be used, in conjunction with surveillance surveys, to monitor trends in occurrences of forest disturbances and to gauge the effectiveness of forest protection measures.

Carbon sequestration

276. Carbon sequestration (CS) is another key **global benefit** to be generated by the GEF Alternative. The activities that will contribute to improved capture and/or maintenance of carbon are improved protection of forests, rehabilitation of degraded areas, farm agroforestry and most importantly in the context of the Project, improved soil and water conservation on agricultural land.

277. There are two fundamental approaches to sequestering carbon in terrestrial ecosystems: (1) protection of ecosystems that store carbon so that sequestration can be maintained or increased; and (2) enhancement of the ability of ecosystems to increase carbon sequestration beyond current conditions. The GEF Alternative primarily follows approach 1, preventing loss of carbon by promoting protection, conservation and sustainable use of forest products from the National Park and National Reserve and thus preserving current carbon reservoirs. While many projects surrounding forestry-based carbon offsets place a heavy emphasis on reforestation, there is little doubt that efforts to slow deforestation and to manage existing forests are just as important for long term climate change mitigation as efforts to accelerate reforestation. Reducing forest degradation through improved protection of Mount Kenya forests will be monitored by field and aerial surveys, as described earlier under the Forest Protection sub-component of Forest Management.

278. The GEF Alternatives also contributes to carbon sequestration and storage via approach 2, by slowing the rate of land degradation, improving management and growth rates of existing trees and crops, changing agricultural practices to increase soil carbon uptake, and promoting on-farm agro-forestry and the adoption of energy-efficient technologies. Enhancement of carbon sequestration in agricultural systems will involve targeted research. The formulation mission met with Kenya Soil Survey (KSS) Unit of Kenya Agricultural Research Institute (KARI) to discuss approaches to CS monitoring. KSS conducts research on soil carbon and is currently involved in a medium-sized GEF project with UNEP entitled *Global (Brazil, India, Jordan, Kenya) Assessment of Soil Organic Stocks*

[29] Gathaara, G.N. 1999. Aerial survey of the destruction of Mount Kenya, Imenti and Ngara Ndare Forest Reserves: February – June 1999. Kenya Wildlife Service, Nairobi.

[30] Vanleeuwe H, Woodley B, Lambrechts C and Gachanja M, February 2003, Change in the state of conservation of Mount Kenya forests: 1999-2002: An Interim Report. DICE, KWS, UNEP, KFWG.

and Change at National Scales. Thus, they have expertise and experience in this field and as local providers with an office in Embu, from which the research would be coordinated, they also have the substantial advantage of local knowledge and experience. KSS involvement will also provide synergies between the two GEF projects in terms of data inputs and refining modelling parameters, which is not only cost effective but will boost global and local knowledge and understanding of how soil carbon varies with soil type, management practices and climate.

279. The objectives for carbon sequestration monitoring on agricultural areas are to:- (a) assess the amount of soil organic carbon (SOC) in different soil units in the project area (b) relate soil carbon to past and current management practices. Also determine the influence of household socio-economic characteristics on soil carbon through affecting HH capacity to provide adequate soil inputs (e.g. labour, fertiliser, fallow etc.), (c) relate soil carbon to vegetation biomass; and (d) establish the variation in soil carbon in relation to climate.

280. Research has shown that the proportion of soil carbon varies significantly between land uses, soil and climate and combinations of these variables. Many of the factors determining carbon input and output on agricultural land are influenced by land management practices. However, the effects may not be measurable for twenty years; a time frame which is clearly beyond the scope of this project. Therefore, the approach to estimating the impact of project activities on carbon sequestration will be to measure soil carbon at explicit sites with different combinations of soil type, climate and management practices. This will facilitate extrapolation across areas with similar combinations of variables and also provide a basis for estimates of increases in carbon sequestration as a result of adoption of improved soil management practices. The information derived from these parameters can be used by farmers and implementers to make informed soil management choices. It can also feed into long term carbon sequestration data sets and improve the accuracy of soil organic carbon simulation models.

281. In addition to edaphic and land management factors, data on socio-economic and farm characteristics (both of which are discussed further below) should also be simultaneously collected as these will affect the capacity of farmers to provide soil inputs (e.g. fertilizer, labour, mulch). Soil management and condition indicators will be agreed between farmers, who will participate in assessments, and other stakeholders (e.g. M&E officer of the PMU, contracted expert). Soil management indicators are many but could include:- (a) tillage and sowing methods, (b) fertilizer type, rate and frequency of application, (c) mulch type, cover and degree of incorporation into the soil, (d) crop type, diversity and productivity, (e) crop rotation and intercropping practices; and (f) pest and disease management. Some soil condition indicators could include, soil vegetation cover, organic matter cover, origin and incorporation, erosion type and severity, rooting depth, texture; and soil biological activity.

Wildlife Barriers

282. The objective of this component is to reduce the frequency of human/wildlife conflict by erecting wildlife barriers to prevent wildlife from moving through cropland. The impact of wildlife barriers on wildlife populations and their habitat is unknown. Whilst experience has shown that barriers successfully protect crops and people, it is possible that they may increase pressure on areas that lack barriers. That is, the problem of crop and infrastructure damage from wildlife on Mount Kenya as a whole may not be solved but merely transferred from one area to another. Elephants are the major problem wildlife species on Mount Kenya and so impact surveys will monitor:- (a) the effect of wildlife barriers on conflict frequency and location, (b) elephant population dynamics and behaviour; and (c) the effect of wildlife barriers on forest habitat.

283. Elephant population and habitat surveys will build on a study that was conducted by KWS in 1998, provided that the methodology and survey locations used in that study are appropriate. The objectives would be to determine trends both in population dynamics and habitat quality, changes to

which could be attributed to the effect of barriers restricting the movement of animals or changing migratory routes.

284. Recording the occurrence of conflicts and elephant damage to crops and infrastructure has been an ongoing activity for KWS. Historical monthly records will form the baseline against which to assess the effect of barriers in terms of reducing conflict frequency and also to determine whether erecting barriers along the boundary of one area transfers the wildlife problem to an adjacent area.

Information Management and Reporting

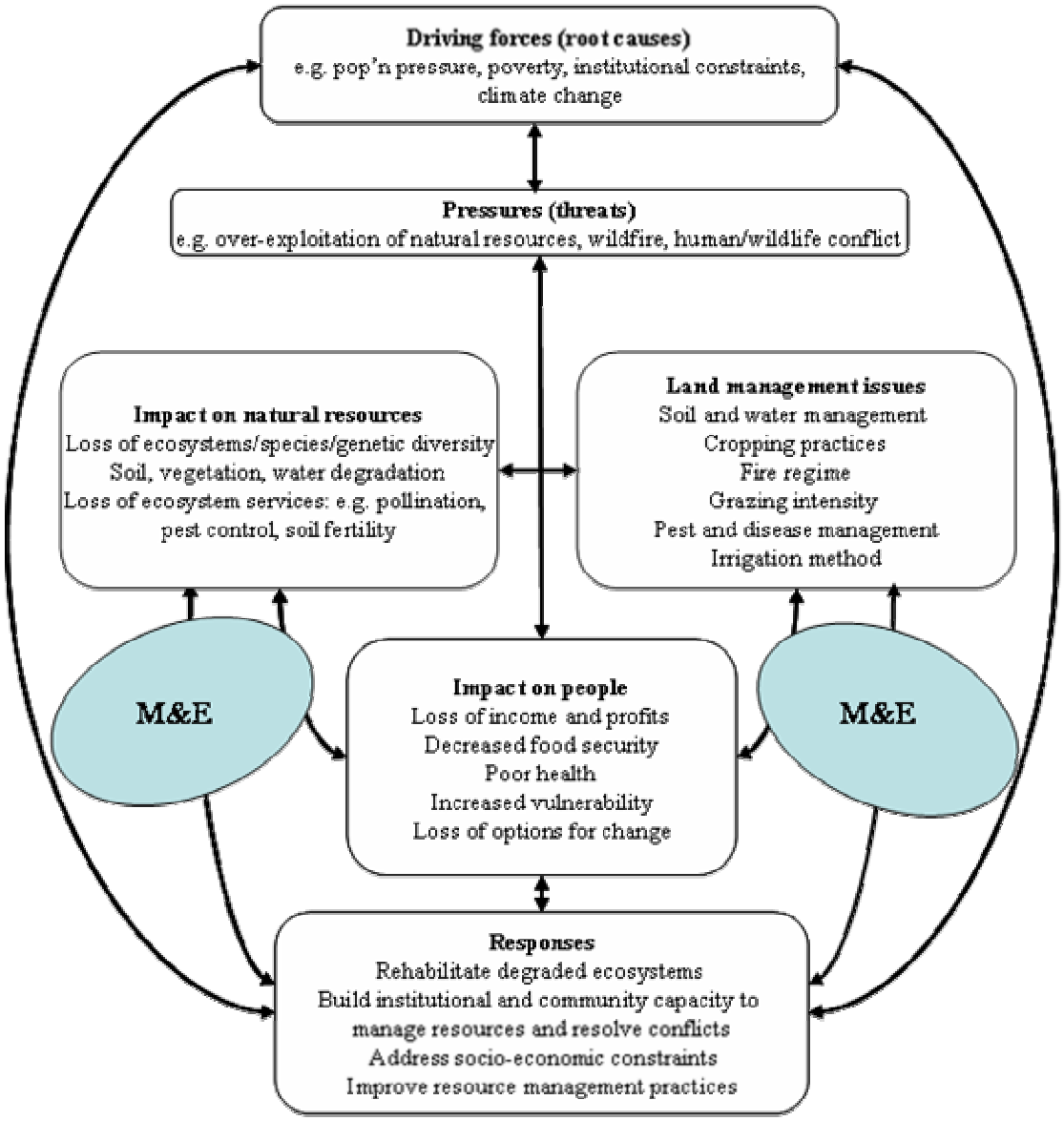
285. Whilst project monitoring is primarily a management function and as such will ultimately be the responsibility of the PMU, it is envisaged that the Mweiga Research Station will play a central role in coordinating monitoring of GEF activities (especially those that fall outside the geographical area of the MKEPP), collating results, availing them to the PMU and other stakeholders, and providing technical support to implementing partners. The PMU will be responsible for the overall coordination of all components of the Project and for reporting on project impacts in line with IFAD and GEF requirements.

286. The PMU will use information provided to Mweiga Research Station by the implementing agencies to submit quarterly technical and financial reports. The reports will assess the level of success in reaching the expected outputs based on the indicators listed in the logical framework and as agreed by stakeholders for the Research, Monitoring and Information Management programme. PMU reports will indicate project potentialities, successes and weak points, and recommend improvements

ANNEX 9: RESPONSE OF GEF ALTERNATIVE TO ECOSYSTEM THREATS

The conceptual framework (Figure 1) for ecosystem management, which guided project design, shows the linkages between the various human and environmental factors that ultimately impact on the condition of natural resources and people. Driving forces exert pressures on the environmental and these pressures produce negative (usually) impacts which in turn cause society to respond by developing or modifying environmental and economic policies and programmes aimed to prevent, minimize or mitigate driving forces, pressures and impacts. Table 1 summarizes the pressures/threats and impacts, and shows the GEF Alternative Mitigating Responses. Monitoring and evaluating responses (see Annex 9) provides feedback on the effect of interventions on the targeting issue(s). The framework illustrates that addressing impacts without considering driving forces and pressures will not provide sustainable solutions to socio-economic or environmental problems.

Figure 1: Conceptual Framework



The above conceptual framework for considering whole of ecosystem management issues and relationships has been adapted from DPSIR framework (OECD 1993)

Table 1: Driving forces, pressures and impacts on the Mt. Kenya ecosystem and responses under the GEF*

Driving forces/root causes	Pressures/threats	Impacts	GEF Alternative Mitigating Responses	
			IFAD financed	**GEF financed**
Institutional constraints weak systems and mechanisms for conservation, monitoring and control of use natural resources due to limited human and financial resources as well as weaknesses of legal and policy framework for NRM	• Illegal forest activities (poaching, logging, clearing, charcoal burning). • Repeated wildfire. • Failure of shamba system. • Illegal and unregulated water abstraction.	• Reduced forest cover causing soil erosion and encouraging establishment of invasive species. • Changes in ecosystem and species composition and loss of natural biodiversity. • Reduced downstream dry season flow causing loss of production and livelihoods • **overall impact is inequitable access and benefits to resources**	• Income generating activities (P) • Improve local level governance (DF) • Enhance water use efficiency (P) • Develop sub-basin water management plans (DF)	• **At micro-level** strengthen KWS infrastructural capacity for ecosystem protection and fire management (DF, P) • Rehabilitate degraded forest areas in partnerships with communities (P, I) • Empower local communities to carry out conservation work, pilot PFM with forest-adjacent communities (DF, P) • Develop decision support with local communities tools to monitor and regulate water abstractions (DF, P, I) • Establish adaptive ecosystem monitoring system (DF)[31]
Poverty and population pressure Tenfold increase in population over 40 years, diminishing farm sizes, loss of income from traditional cash crops and reduced investments in appropriate	• reliance on forest resources as a coping strategy • Human/wildlife conflict due to forest encroachment • Intensification in all human-managed systems. • Inadequate land management inputs for sustainability of production. • Inappropriate land use • Reduction in water quantity and	• Extractive and opportunistic exploitation of forest resources leading to degradation and reduction or loss of target species. • Poor agricultural practices leading to reduced crop and livestock production and productivity • Loss of crops due to wildlife incursions into farmlands, • damage to infrastructure and injury or	• As above for IGA (DF) plus: • Protection of communities from wildlife menace (PI) • Improve soil and water management practices including soil fertility to increase productivity and production (P, I) • Improve marketing of agricultural products (DF)	• As above plus: • Assist communities to resolve human/wildlife conflicts (P, I)

[31] The GOK recognises the weaknesses in existing legal and policy framework and has formulated a new Water Act and Policy 2002 which are under implementation and the Forest Policy (completed) and Forest Bill which will be presented to parliament for enactment in the last quarter of 2004. The current government has continued to implement NRM as has been the case in the last 70 years. The main constraint is limited resources as the priority is poverty reduction and NRM issues are secondary. It is in recognition of the limited resources available to manage natural resources on the part of GOK, GEF funds are being sough to supplement the GOK efforts in poverty reduction under the IFAD loan.

* Notes: Bracketed letters after actions indicate whether driving force (DF), pressure (P) or impact (I) are addressed. See also Fig. 1

Table 1: Driving forces, pressures and impacts on the Mt. Kenya ecosystem and responses under the GEF*

Driving forces/root causes	Pressures/threats	Impacts	GEF Alternative Mitigating Responses	
			IFAD financed	**GEF financed**
agricultural practices	quality.	death to people and wildlife. • Monocultures leading to loss of agricultural biodiversity and reduced ecosystem resilience and ecosystem function. • Negative impacts on flora, fauna and soil properties. • Soil erosion, reduced fertility and thus crop productivity. Water pollution causing water-related disease (e.g. malaria).		
Climate change	• Potentially increased frequency of fire, drought and flooding; outbreaks of pests and diseases; changed hydrological regime; reduced ecosystem resilience	• Largely unknown but potentially: reduced crop production (e.g. tea), change in species composition, reduction/loss of populations of vulnerable species and ecosystems.	• Improve soil and water management practices to enhance carbon sequestration (DF) • Promote on-farm forestry (DF) • Increase efficiency of charcoal kilns (DF)	• Protect forest carbon store (DF) • Rehabilitate degraded forest areas (I) • Investigate expansion of protected area by establishing wildlife corridors (P, I) • Establish adaptive ecosystem monitoring system (DF)

* Notes: Bracketed letters after actions indicate whether driving force (DF), pressure (P) or impact (I) are addressed. See also Fig. 1

Annex 10: Benefits by Financier by Operational Programme 12, 15, 3 and 4

	Benefits of MKEPP	
	IFAD Funding	**GEF Funding**
PRSP DEVELOPMENT GOAL Reduction of the proportion of people living in extreme poverty by half and of poverty prevalence to less than 30% by 2015. *Top Priority Sector: Agriculture and Rural Development*: Sub-sectors: 1. Crop development 2. Rural water 3. Livestock development 4. Food security 5. Lands and settlement 6. Environment management 7. Forestry 8. Fisheries	• Improved efficiency, equitability and community awareness of water use and consequent improvement of communities' livelihoods • Improvement in food security and income and poverty reduction through: - Increased productivity through better soil and water management - Creation of alternative IGAs - Better marketing of agricultural/forest products • Empowerment of communities for participation in planning, implementation and monitoring of development activities. • Improved services delivered to local communities	• Effective management and protection of Mt. Kenya watershed (NP&R), on which several millions of Kenyans depend for water • Increased and more equitably shared benefits from forest resources for surrounding communities • Increased agricultural yields and income through reduction of crop damage by elephants
GEF ENTRY POINT **OP 12 Integrated Ecosystem Management** *Focal area: synergy of biodiversity, climate change and international waters* Objective: Adoption of comprehensive ecosystem management interventions that integrate ecological, economic, and social goals to achieve multiple and cross-cutting benefits. These benefits may include two or more of the following: a) Conservation and sustainable use of **biological diversity**, as well as equitable sharing of benefits arising from biodiversity use; b) Reduction of net emissions and increased storage of **greenhouse gases** in terrestrial and aquatic ecosystems; c) Conservation and **sustainable use of water** bodies, including watersheds, river basins, and coastal zones; d) **Prevention of pollution** of globally important terrestrial and aquatic ecosystems.	*Biodiversity*: • Reduced human pressure on biodiversity in protected areas (NP&R) through improved livelihoods of surrounding communities • Better organised and structured communities are more effective and reliable partners in ecosystem management and biodiversity protection *Carbon sequestration:* • Enhanced carbon sequestration/holding capacity and reduced greenhouse gas emissions through rehabilitation of degraded land in non-protected areas, promotion of on-farm agro-forestry, improved soil and water conservation, increased productivity, and improved agricultural practices to increase soil carbon uptake *Water management and pollution:* • Improved management of water catchments and river basins. • Reduced pollution of water ways (siltage)	*Biodiversity*: • Rehabilitation, protection and management of globally significant biodiversity (NP&R) • Increased sustainability of biodiversity protection through strengthening of regulating institutions (KWS) and participation of local communities (benefit sharing) • Improved capacity for biodiversity and natural resource monitoring and planning within protected areas • Enhanced GoK capacity to fulfil and report on global environmental commitments • Reduced loss of protected species (elephants) because of human/wildlife conflict *Carbon sequestration:* • Enhanced carbon sequestration/holding capacity and reduced greenhouse gas emissions through rehabilitation and conservation of forests *Water management and pollution:* • Creation of an enabling environment for conservation and sustainable use of Mt. Kenya water resources and watershed
Linkage to: **OP 15 Sustainable Land Management** *Focal area: land degradation* Objective: mitigation of the causes and negative impacts of land degradation on the structure and functional integrity of ecosystems through sustainable land management practices.	• Reduction in land degradation and soil erosion outside protected areas (agricultural lands, trust lands, communal lands, reclaimed wetlands, cultivated river banks and road embankments)	• Reduction in land degradation and soil erosion within protected areas (forests)

* Notes: Bracketed letters after actions indicate whether driving force (DF), pressure (P) or impact (I) are addressed. See also Fig. 1

	Benefits of MKEPP	
	IFAD Funding	**GEF Funding**
Linkage to: **OP 3 Forests Ecosystems** *Focal area: Biodiversity* Objective: The objective of the programme is conservation and sustainable use of biological resources in forests ecosystems.	• Promote sustainable use of forest resources in agricultural areas.	• Promote conservation of biological diversity in protected areas. • Promote conservation of endemic species in protected areas. • Promote conservation of primary/old growth ecologically mature secondary forest ecosystems and strengthen conservation systems • Strengthen conservation systems with participation of local communities.
Linkage to: **OP 4 Mountain Ecosystems** *Focal area: Biodiversity* Objective: The objective of the programme is conservation and sustainable use of biological resources in mountain ecosystems.	• Improve local community's livelihoods by investing in agricultural areas and thereby reduce pressure on the mountain ecosystem for its protection	• In situ protection of biodiversity in Mount Kenya • Improve management of Mt. Kenya Ecosystem, by combining productive, socio-economic and conservation. • Support local communities to be involved in the management of the ecosystem • Strengthen capacity of KWS to manage the ecosystem. • Strict protection of the fauna for its conservation while encourage use of some of the resources (water) to benefit the adjacent communities.

***** Notes: Bracketed letters after actions indicate whether driving force (DF), pressure (P) or impact (I) are addressed. See also Fig. 1

Annex 11: Endorsement Letter from Government of Kenya

* Notes: Bracketed letters after actions indicate whether driving force (DF), pressure (P) or impact (I) are addressed. See also Fig. 1