

PROJECT BRIEF

1. Identifiers

Project Number:	GF/1300-97-04
Project Name:	Botswana, Kenya, Mali: Management of Indigenous Vegetation for the Rehabilitation of Degraded Rangelands in the Arid Zone of Africa
Duration:	5 years
Implementing Agency:	UNEP and UNDP
Executing Agency:	
National Projects:	Ministry of Agriculture (Botswana), Ministry of Environmental Conservation (Kenya), Ministry of Environment (Mali).
Regional Project:	Regional Coordination Unit
Requesting Countries:	Botswana, Kenya, Mali.
Eligibility:	Conventions signed: Biological Diversity – Mali (3/29/95), Kenya (7/26/94), Botswana (9/12/94); Climate Change Mali (12/28/94), Kenya (8/30/94), Botswana (1/27/94); Desertification – Mali and Kenya (12/26/96), Botswana (12/29/96)
GEF Focal Area:	Biodiversity/ Land Degradation (with components in climate change and international waters).
GEF Programming Framework:	OP#1: Arid and Semi-arid Zone Ecosystems.

2. Summary

This project is a demonstration programme for biodiversity conservation and dryland ecosystem restoration in the arid and semi-arid zones of Africa. The project will combine community based indigenous knowledge, the findings of scientific research and past practical experience to rehabilitate degraded ecosystems and conserve biodiversity by developing sustainable natural resource management systems. A major goal of the project is to facilitate an exchange of knowledge and experience between three comparable but different situations and develop models, which can be transferred elsewhere within the continent. Technology transfer and supporting research will be a vital part of the project. This will be achieved by (i) strengthening appropriate indigenous management systems; (ii) developing integrated bio-socio-economic data systems; (iii) rehabilitating indigenous vegetation and degraded land; (iv) improving the effectiveness of livestock production and marketing and developing of alternative livelihood systems. Implementation of the project is based on a firm partnership with African arid-zone pastoralists and on close technical co-operation between the collaborating countries.

3. Costs and Financing (Million US\$):

GEF:	Project:	US\$ 7.79 m
	PDF - B:	US\$ 0.33 m
	Project Appraisal:	US\$ 0.06 m
	Monitoring and Evaluation:	US\$ 0.14 m
	Project Administration:	US\$ 0.734 m
	Subtotal GEF:	US\$ 9.054 m
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Co-financing:	The University of Oslo:	US\$ 1.680
	Others:	US\$ 0.500 m
	Government contributions:	US\$ 2.150 m
Total Project Cost:		US\$13.384 m

4 Associated Financing (Millions US\$): N/A

5. Operational Focal Point Endorsements:

Name: Mr. S. S.G. Tumelo	Title: Permanent Secretary
Organization: Ministry of Agriculture	Date: 30 April 1998 (Botswana)
Name: B.O. K'Omudho	Title: Director
Organization: National Environment Secretariat (NES)	Date: 14 May 1998 (Kenya)
Name: H.E. Mohamed Ag Erlaf	Title: Minister of Environment
Organization: Government of Mali	Date: 7 May 1998 (Mali)

6. IA Contact:

Mr. Ahmed Djoghlaif, Executive Coordinator, GEF Co-ordination Office, UNEP, Nairobi, Kenya.
Fax No: (254) 2 623140 Tel. (254) 2 624166

Mr. Rafael Asenjo, Executive Coordinator, GEF/UNDP, New York, USA
Fax no: (1 212) 906 6690 Tel. (1 212) 906 5408

LIST OF ACRONYMS/ABBREVIATIONS USED

BRIMP: Botswana Range Inventory and Monitoring Project
CBD: Convention on Biological Diversity
DMI: Desert Margins Initiative
GEF: Global Environment Facility
GIS: Geographic Information System
GOB: Government of Botswana
GOK: Government of Kenya
GOM: Government of Mali
GTX: Deutsche Gesellschaft für Technische Zusammenarbeit
IGN: Institut Geographique National
IPAL: Integrated Project in Arid Lands
IUCN: World Conservation Union
NEAP: National Environment Action Plan
NES: National Environment Secretariat (Kenya)
NORAD: Norwegian Agency for Development Cooperation
NPL: National Project Leader
NPU: National Project Unit
OFP: Operational Focal Point
PLEC: People, Land Management and Environmental Change
PNAE: Plan National d'Action Environmentale
RCU: Regional Coordination Unit
RPSC: Regional Policy Steering Committee
SADC: South African Development Community
STAP: Scientific and Technical Advisory Panel
TAC: Technical Advisory Committee
TREM: Turkana Resources Evaluation and Monitoring Unit
UNDP: United Nations Development Programme
UNEP: United Nations Environment Programme
UNESCO: United Nations Educational, Scientific and Cultural Organisation

BACKGROUND AND CONTEXT

1. The arid/semi-arid zones of Africa cover 60% of Africa and a major part of Botswana (80%), Kenya (80%) and Mali (70%). These arid and support more than 70% of the livestock, and 90% of wildlife species in Botswana; 50% of the livestock and 75% of the wildlife in Kenya, and 60% of the national livestock herd in Mali. 60 % of the continent is covered by arid and semi-arid lands.
2. The indigenous vegetation of the dryland ecosystems consists of grasses and herbaceous and woody species, which are highly adapted and endemic to arid and semi-arid zones. Together they form a unique ecological association of globally significant biodiversity and geological, climatic and human components, which have evolved over a very long time period. One of the greatest values of indigenous vegetation of the arid zones of Africa is its ability to maintain resilience, through the evolution of special adaptative features to droughts, “normal” variability, and other stressful events. It also plays a crucial role in soil stabilization and protection, CO₂ sequestration, and the creation of micro- habitats for soil microorganisms, which are important in ecological processes in general and especially in nutrient turnover. The indigenous vegetation of arid Africa has evolved specific characteristics that make it distinct, and unique, in relation to other arid lands of the earth. Indigenous vegetation is also a primary resource of the pastoral and agropastoral economy, accounting for a great proportion of livestock feed, materials for construction, fuelwood, shelter, medicines and pharmaceutical products. They are also centers of speciation for various agriculturally important plants, for instance fonio (wild rice), durra, sorghum and the fodder crop *Brachyaria*.
3. The indigenous vegetation that characterizes the arid/semi-arid zone of Africa has evolved specialized adaptations over millions of years, thus making it uniquely adapted to the environment characterized by recurring drought. The flora and fauna of the arid/semi-arid zone of Africa is not characterized by a high degree of species diversity. Environmental conditions tend to be uniform over vast geographic areas and most species occur over broad geographic ranges. Since species and gene pools that are well adapted to drier areas are few in number, the relative loss of biodiversity in arid zone environments is particularly great. This is occurring within and around the three African deserts of the Kalahari-Namib (Botswana), the Somali-Chalbi (Kenya) and Sahara (Mali) as pressure on the resource continues to mount, and land continues to suffer more and more severe levels of degradation.
4. Proper management of indigenous vegetation is crucial to the survival of livestock husbandry and farming, and therefore the rural people. Notwithstanding this, many important vegetation associations, such as *Acacia tortilis*, *Acacia senegal* and *Acacia galpinii* being lost.¹ Threats to these associations are increasing. This loss of natural vegetation through increased anthropic pressure, has resulted in biodiversity loss and localised loss of vegetation cover around settlements, reducing the resilience of the arid zone ecosystems to recurrent droughts, and at the same time reducing their ability to function as resource bases for the local communities. The problem is exacerbated by drought, which in turn leaves the inhabitants no alternatives but to adopt practices that have degraded natural resources and by extension biological diversity.
5. A key factor for sustainable management of arid zones is the ability to use indigenous institutions in order to maintain biodiversity and full resource access rights. Maintaining the diversity within species of living organisms, between species and between ecosystems form important elements in rational management strategies. Traditional management systems have an inherent interest in conserving biodiversity because their diverse traditional economic base (different animal species, occasional use

¹ IPAL (1998) Ed. W. J. Lusigi. Integrated Resource. Assessment and Management Plan for Western Marsabit District Part I and II. UNESCO – MAB. IUCN (1990): Biodiversity in Sub-Saharan Africa and its Islands.

of medicinal plants and wild food) requires a diverse feed and resource supply, and a diverse set of habitats. The role of the pastoral communities in management of indigenous vegetation is considered crucial since they have developed numerous methods that need institutional strengthening for continued sustainability.

GEF Programming Context

6. The project falls within the GEF priority area of Arid and Semi-arid Ecosystems, Operational Programme 1. This operational programme stresses sustainable use of biodiversity through strengthening the involvement of local and indigenous institutions of natural resource management, capacity-building, human resources development and strengthening both indigenous and formal legal institutional systems as important elements. GEF will also facilitate international and regional co-operation, scientific assessments, conservation of representative habitats, as well as conservation and sustainable use of endemic flora and fauna.
7. This project fits in with the priorities of the COP of the CBD on the sustainable use and conservation of arid- zone ecosystems. It is also in conformity with the GEF Operational Strategy, as well as the Framework for GEF Activities concerning Land Degradation as a cross cutting theme with links to climate change and international waters. Re-vegetation of degraded land is important for soil conservation, restoration of degraded areas, natural resources management emphasising integrated resource use, energy conservation using alternative energy sources to conserve the indigenous vegetation and increasing biodiversity. The main elements of the project correspond with linkages between land degradation and the GEF focal areas, as identified by the STAP Workshop on Land Degradation. The project addresses land-tenure problems, resource access rights, collects and analyses data, puts strong emphasis on stakeholder participation, indigenous knowledge utilisation and involves institutions at regional and national levels to reverse land degradation and helps develop sustainable management systems.

Justification for GEF financing

8. The proposed project aims at conserving and rehabilitating globally significant biodiversity in the three African dryland areas through halting land degradation and developing sustainable management systems. Indigenous vegetation and the biodiversity of the arid/semi-arid zone of Africa is of global significance because it is composed of plants and animals that are truly adapted to this vast geographic area. It is critical that sustainable-range management/land -use systems be developed for the indigenous vegetation of this zone. This can best be done by empowering the resource users to control and manage the resources. By creating and testing model approaches in this project we lay the basis for extension of these same approaches to other parts of the world.
9. Building upon IPAL research in Northern Kenya and the experiences gained from practical management of indigenous vegetation from the Kalahari-Namib and the Sudano-Sahel zones, the project will also identify, synthesise and apply the state-of-the-art methods and approaches to demonstrate how globally significant biodiversity can be restored and protected through halting land degradation and the development of sustainable management systems. A major contribution of the project to the control of desertification will be in the development of a model for replication throughout the arid/semi-arid zones, particularly in Africa. Project demonstration sites in the three countries offer important regional perspectives because of the relative, comparative advantages of each country. Botswana has many years of experience with community management systems and a strong baseline. Kenya offers insight and guidelines on appropriate technologies through the work of IPAL, and Mali bring experiences with decentralization.

10. Although these ecosystems are inherently resilient to long-term changes, a combination of factors can lead these ecosystems beyond a sustainable thresholds where they become highly sensitive to changes in management practices. This project will develop innovative and integrated management systems, which incorporate indigenous knowledge, traditional management systems and modern scientific findings. The underlying causes of land degradation will be addressed in order to create a more sustainable and long-term approach to rangeland management. The rehabilitation and re-vegetation of degraded rangelands in the long term will also increase carbon fixation primarily through the increase of woody cover, and a reduction of soil erosion will have positive impacts on international waterbodies of Niger River and Lake Turkana. This project will develop participatory, community-based sustainable range-management systems in key demonstration sites representative of the three major arid/semi-arid zones of Africa.
11. Research and experimental management in arid/semi-arid zones have provided a wealth of bio-physical and socio-economic data on land-use. This will be the basis of establishing a programme of community-based natural resource management. Research on indigenous vegetation by the UNEP/UNESCO-Integrated Project in Arid Lands (IPAL) and the NORAD funded TREMU among others brought to light the nature of vegetation degradation as one aspect of land degradation. It showed that land degradation occurs where human and livestock pressure on vegetation is intense, particularly around settlement areas, particularly around settlement areas. The IPAL Management Guidelines and recommendations on indigenous vegetation rehabilitation have implications for other arid zones of Africa. The guidelines are aimed at arresting degradation of natural resources, and using rational management systems.
12. Indigenous vegetation and management systems and practices are not homogenous in all the sites, but the proximate causes of land degradation and biodiversity loss are comparable. Therefore, a comparative research should bring to light useful results. There is a need for regional exchange of experiences, testing of different tools and methodology. In addition the project should be viewed within the broader perspective of activities for improving productivity of arid lands and rehabilitation of the degraded areas. The project will establish links with various studies and management activities that are being undertaken and planned by governments, NGOs and other international and regional organisations.
13. Although this project is undertaken in the three arid zones of Africa, there is no doubt that the experience to be gained, and the practical applications of that experience, particularly in indigenous knowledge-based vegetation management, will make a valuable contribution to the conservation of biodiversity throughout the arid zones of the world. The support being sought from GEF to cover the incremental costs will facilitate the testing of the full range of resource management systems through combating land degradation to use the results for demonstration and training for arid-zone resource managers across Africa and other arid zones of the world.

Linkages of the project with country priorities

14. Given the importance of the arid and semi-arid zones to the participating countries, the Governments of Botswana, Kenya and Mali have undertaken several initiatives to address the issue of land degradation and the extensive loss of indigenous vegetation. Combating land degradation is a major issue of the participating countries as stated explicitly in a number of programmes and initiatives (See Baseline).
15. In the case of Botswana, these concerns are expressed in the UNEP/SADC Kalahari-Namib Project, the Agricultural Development Programme; the Forestry Sector Development Policies and the

National Conservation Strategy Action Plans; and the Land and Environmental Development Strategies under SADC. The Government of Botswana is currently undertaking a Range Inventory and Monitoring Project (BRIMP), which is being implemented with other Government agencies. The Government of Botswana has allocated 28% of its National Development Budget to the protection and conservation of natural resources. These are captured in the projects and programmes such as soil conservation, land resources inventory and monitoring and sustainable utilisation of natural resources, based on community based natural resource management strategies. Currently the Government of Botswana is strengthening its natural resources regulations, policies and acts to comply with the agreed international conventions and treaties.

16. In Kenya, the project falls within the National Development Policy that aims at integrating arid and semi-arid lands into the mainstream of the national economy and social development in an environmentally sustainable manner. The project also falls within the recommendations of the NEAP that was adopted by the Government of Kenya in 1996. Furthermore, the Government of Kenya has developed a national policy bill on Environment Coordination and Management, which has specific policies addressing the conservation of biodiversity within the arid and semi-arid land ecosystems. The bill is currently awaiting the parliamentary approval and once enacted into a law it will provide an enabling environment for this project. In addition, Kenya is in the process of preparing a National Biodiversity Strategy and Action Plan with GEF financing, and one of the elements of this strategy will focus on dryland biodiversity.
17. In Mali, the concerns are expressed in the National Plan of Action to Combat Desertification, the North-East Stock Raising and Land Rehabilitation Project, along with the National Plan for Action on the Environment (PNAE), which has now been finalized. Mali is also developing a national biodiversity strategy with GEF financing. The project will also benefit from the current decentralisation process (e.g. changes in land-tenure systems) being undertaken by the Government to make individuals and community more responsible for land management. This will provide an enabling environment for this project. In addition, significant sections of Mali have already been covered by the UNEP/IGN study, which utilised remote sensing techniques to evaluate land degradation trends as a basis for planning alternative management strategies. This information will be used to an advantage by this regional project.

System Boundaries, Regionality and Criteria for Site Selection

18. Regional sites were situated so as to be comparable and complementary. These sites then serve as representative samples of the various arid zones of Africa, and provide a sound basis for demonstrating different indigenous knowledge management approaches to conservation and sustainable use of biodiversity. Criteria for site selection include representativeness of the globally significant biodiversity in the area, presence of viable indigenous management structures and supportive Government structures, community commitment to the project and comparable eco-climatic features. Given the objective of developing a replicable model in Africa, this project has a regional scope. The different management systems operate in comparable contexts, allowing the project to demonstrate general management elements for sustainable use and conservation of biodiversity. The majority of the project activities are at the local level, however there will be many linkages to national programmes and policies.
19. Seven areas have been selected as demonstration sites for the project; Rakops, Lephephe and Bokspits in the Kalahari-Namib zone, Marsabit and Turkana in the Somali-Chalbi and South Azaouad and Nara in the Sudano-Sahel. The demonstration sites in the Kalahari-Namib zone cover about 3500 km² in the case of Rakops, 970 km² for Lephephe and 2000km² for Bokspits-Struizendam. The stakeholder communities of the Kalahari-Namib demonstration sites include different ethnic groups,

such as Bayei, Hereoes, Bushmen, (Basarwa), Bakalanga, Banajwa, Batawana, Bakjgalagadi and Coloureds. The project sites are Khumaga, Tsoe, Sukwane, Rakops, Mmadikola, Kedia (total population 10,000), Lephephe, Boatlaname, Sojwe (total population 2,600) Bokspits-Struizendam, (total population 15,000), where the economy is based on livestock husbandry and subsistence farming. The total population in the project areas amounts to approximately 37,000. These areas receive 150-400mm annual rainfall.

20. The indigenous vegetation of the demonstration sites in the Kalahari-Namib zone comprise Kalahari Acacia wooded grassland, deciduous bushland and Zambesian woodland, with extensive wetlands in the Okavango delta and halophytic vegetation in the Makgadikgadi pan, which are also important centres of endemism. About 17 endemic plant species are known to exist in this zone of Botswana. In Rakops, there has been a die-off of riverine woodlands, affecting many species such as *Acacia galpinii*, *Combretum imberbe*, *Ziziphus mucronata*, *Acacia karroo*, *Grewia spp.*, *Ximenia spp.* and *Phoenix reclinata*. These species have important uses such as fodder, medicines, dyes and household materials. Among the Graminae, *Urochloa mossambicensis*, *Eragrostis spp.*, and *Odyssea pancinervis*, are disappearing. In the riverine habitats, *Phragmites communis*, *Cyperus spp.*, and *Nymphaea caerulea* (waterlily), which are an important source of food and construction materials have disappeared. Lephephe has lost much of its woody and herbaceous vegetation cover. Browsing by goats on regenerating *Acacia* is heavy. The woody species lost from the site include *Peltophorum africanum* and *Spirostachys africanum*. The loss of Graminae is comparable to the Rakops site. The Bokspitz-Struizendam demonstration site is sparsely vegetated. Woody vegetation occurs on the banks of fossil drainage lines and on the crests of stable fossil sand dunes.
21. In the Kalahari-Namib zone of Botswana, yearly rainfall for the past 60 years averaged 150-400 mm. Rainfall variability is reflected by highly variable indigenous vegetation cover. About 70% of the land is categorised as communal land, 20% is state-land and the remaining 10% leasehold and freehold. Botswana is a beef producing country, most of which is produced by the pastoralists. The pastoralists' grazing lands have been demarcated by cordon fences to separate livestock and wildlife areas. These cordon fences have altered the traditional seasonal grazing movements. Within the enclosed areas, conflicts between pastoral land use and arable land on one hand and between pastoralists, agriculturalists and wildlife on the other have contributed to the overall degradation of indigenous vegetation. Biodiversity surveys of the country have confirmed that a number of species of plants and animals are being threatened.
22. In the Somali-Chalbi zone, the demonstration sites are Marsabit and Turkana. The Marsabit field-sites of Korr-Ngurnit cover 3,000 km² and have a total population of 4,000 people, while the Hurri Hills Field-site covers 2,190 km² and has a total population of 3,500. The Turkana demonstration site has three field-sites comprising Turkwell, Central and Katilu, which covers 15,000 km² and contains a population of 50,000. In the Somali-Chalbi Zone rainfall varies between less than 150 to 600 mm per year. The stakeholder pastoralist communities of the Somali-Chalbi zone are the Gabbra, the Booran, the Rendille, the Samburu and the Turkana pastoralists. The pastoral population manages sheep, cattle, goats and camels. Land use is characterised by movements between wet season and dry season rangelands. Traditional land use began to break down during the previous decades. Following sedentarisation of the majority of the pastoralists, over-exploitation of indigenous woody vegetation and overgrazing of the herbaceous vegetation layer have become intensive. This has resulted in localised loss of vegetation cover around settlements.
23. The vegetation of the Somali-Chalbi zone is predominately dry bushland with pockets of montane forests and inselbergs, which are hot spots of endemism. IPAL research has listed more than 300 indigenous plant species, of which some are endemic. *Acacia seyal* subsp. *marsabitiensis* is endemic to the Marsabit demonstration site. *Commiphora africana*, *Acacia tortilis*, *Aloe sp.* and several species

of grasses and dwarf shrubs are threatened by degradation. In the Turkana demonstration sites, *Acacia tortilis* and *Hyphaena compressa* are the chief sources of livestock forage as well as human food. These valuable tree species are managed and conserved using indigenous woodland management systems ("ekwar"). The main threat is the effect of the dam on the Turkwell River, which has changed flood patterns and threatened fauna habitats. Poaching has reduced the population of reticulated giraffe, while South Turkana harbours an endangered population of elephants.

24. In the Sudano-Sahel zone, the demonstration sites selected were South Azaouad and Nara inhabited by pastoralists and agro-pastoralists who are mainly Tuaregs, Fulanis and Arabs. The South Azaouad represents the arid-zone ecosystems (150 mm/ yr) of the Sahelo-Saharan steppes north of Timbuktu to north of Bourem, covering 4000 km². The Nara site in the North-West Sahel represents the semi-arid zone ecosystems (300-400 mm/ yr) and covers 3100 km². In the Sudano-Sahel zone, the shift of rainfall isohyets southwards and the drying conditions of the northern Sahel-Sahara zone has forced the northern pastoralists populations to move southwards. This has concentrated the population within the Niger valley, where competition between farmers and pastoralists is increasing. Traditionally, the transhumance grazing cycle takes the pastoralists to northern Sahel during the rainy season. During the dry season, pastoralists move southwards towards the Niger valley. Pastoralists and agro-pastoralists established reciprocal arrangements of resource use in the Niger valley, which were strengthened by tribal conventions. Presently, transhumance from different West African countries is putting additional pressure on the indigenous vegetation.
25. The vegetation of Sudano-Sahel zone of Mali is dry open savannah with rich diversity in the Niger delta valley. About 11 endemic plant species have been recorded. The drought of the 1970s and 1980s caused dynamic changes in the indigenous vegetation structure and composition. *Acacia raddiana* was dominant in the northern Sahel before the drought, but has since regressed, and has been replaced by *Balanites aegyptica*. Also *B. aegyptica* has been replaced by *Leptadenia pyrotechnica* with an increased dominance of *Chizophira brochwana*. In the northeast of the Sudano-Sahel zone of Mali, *Maerua crassifolia* has been replaced by *Boscia senegalensis*, which maintains dominance on clay soils within dune depressions. *A. raddiana*, which had disappeared from the drier northern Sahel zone, is regenerating on the banks of the Niger River. Changes have also occurred in the herbaceous vegetation. For the Sudano-Sahel zone demonstration sites overall, *Acacia senegal* has disappeared, while several other woody species are either disappearing or threatened. In the Nara demonstration site, *Commiphora africana*, *Pterocarpus lucens*, *Dalbergia melanoxylon*, *Prosopis africana* and *Lanea velutina* are threatened, disappearing or have recently disappeared. In the South Azaouad demonstration site, *Hyphaena thebaica* and *Diospiros mespiliphormis* are threatened with over-exploitation. Among the Graminae, *Andropogon gayana* and *Panicum anabasisium* are disappearing. *Panicum augidum* is also disappearing, while *Schoenfeldia gracilis* is threatened. *Cenchrus biflorus* is disappearing in the Houssa area because of overharvesting, overgrazing and drought. Retrogression of indigenous vegetation has also had an adverse impact on fauna habitats, leading to the disappearance of several wildlife species.
26. In all project areas, rainfall is highly variable and unpredictable, with recurrent droughts and pronounced dry seasons. In the Kalahari-Namib zone, droughts lasting up to 7 years are expected every 20 years, and in the Somali-Chalbi zone, major droughts occur every 10 years. In the Sudano-Sahel zone, the rainfall isohyets have shifted southwards during the last decades. The climatic conditions are reflected in the indigenous vegetation cover, which varies greatly from year to year. Traditionally, the pastoralist communities moved between wet season and dry season grazing lands, and in the Sudano-Sahel zone, transhumance grazing patterns have evolved. These systems are now put under pressure from increased sedentarization (Somali-Chalbi), cordon fences for animal disease control (Kalahari-Namib), competition between agriculturists and pastoralists (Sudano-Sahel), and general over-exploitation of the natural vegetation resources, throughout the region.

The Baseline Situation, threats to biodiversity and land degradation

27. The baseline situation of the demonstration sites is typical of nearly all the arid/semi-arid zones of Africa. It is characterized by ongoing, increasingly severe land degradation, especially around settlements, and particularly of the indigenous vegetation. In the most severely degraded sites, nearly all biodiversity has been lost. Previously stable fossil dunes have become live dunes. On heavier soils the vegetation cover has been lost, the topsoil eroded away, and the subsoil has formed a nearly impermeable crust that further accelerates runoff that makes restoration especially difficult. Wind and water erosion is widespread and severe. Shallow, stony soils become even more shallow, permanently reducing their potential productivity. Soil organic matter decreases and with it, infiltration rates decline, water and nutrient holding capacity of the soil declines as does its soils microbial diversity.
28. The baseline situation is characterised by a lack of effective community-level control over range resources. Many of the rangelands are characterized by open access with few effective management structures. Traditionally, the rangelands and water points were locally controlled and managed. Pastoralists and their herds were highly mobile moving with the seasons and with the rains and the pastures. This situation has changed with the imposition of centralized ownership and control over land and resources. Although there have been recent high-level policy movements towards decentralization and local empowerment, this has not yet been fully applied to the local level.
29. The “normal” condition is one of partial, but continuing, degradation of vegetative cover. Regeneration of the natural vegetation becomes more and more problematic. Vegetation biomass and cover declines and with it, the amount of carbon sequestered. Table 2.1 Annex IV presents a synthesised analysis of the intermediate, proximate and ultimate root causes of biodiversity loss and land degradation in the three countries. GEF funding is sought for activities that directly address the intermediate and proximate causes, while relying on the baseline’s ongoing programs and projects to address the ultimate causes.
30. The proximate causes of land degradation and biodiversity loss in the arid and semi-arid zone are similar and comparable among the three countries and can be listed as follows:
 - The breakdown/loss of traditional management systems has contributed to weakening of indigenous management systems. Local pastoral communities are not empowered to manage their rangeland and to apply traditional range management systems/techniques where this local knowledge still exists. Centralised management of range resources has been proven to be ineffective. The most basic prerequisite for sustainable management of any type of renewable natural resource is to have clearly defined resource access rights in the hands of a recognized body that has the means and the motivation to manage the resources. It is the local pastoral communities who depend on the range resource that have the principal motivation to manage the resource sustainably.
 - Shifting agriculture, and over-harvesting for fuel and construction needs are leading to ongoing high rates of deforestation particularly in a widening radius around settlements and urban areas.
 - However, indigenous systems are not able to cope with recent external pressures in particular range compression due to changes in settlement patterns, agricultural encroachment, land use conflicts, and cordon fences in Botswana for National Parks and sanitary control. More and more of dry season pasture and water resources have been taken over by agriculturalists. Rainfed agriculture is being extended into lower and lower rainfall zones into former dry-season pastures, often leading to accelerated, severe land degradation.
 - Freedom of movement and mobility of pastoralists is increasingly reduced. Government policies favor sedentarization of pastoralists and there are restrictions on movement across national borders. Access to dry-season water points becomes more and more restricted, as the water and the

surrounding lands are utilised or occupied by farmers. In addition, more and more farmers that used to allow pastoralists to use their crop residues for their livestock are now using all the residues for their own smallstock. Mobility was a key element of most traditional grazing systems. Mobility is ecologically desirable in arid/semi-arid rangelands because it allows pastoralists to move their herds to where the rains have fallen and to where the forage is most abundant (this is desirable when not combined with open unmanaged access to the resource).

- Lack of ready access to livestock markets with financially attractive producer prices leads to diminished sales of livestock and, consequently, lower income opportunities. This is especially a problem in Kenya where livestock producers are only allowed to sell their livestock in restricted markets in Nairobi.
 - Pressure for survival push individual land users to overexploit other range resources (medical plants etc.) There is a lack of economic incentives that link income generation to the sustainable management and conservation of rangeland resources;
 - Because of continuing “top-down” approaches, there continues to be a lack of integration of scientific and indigenous knowledge systems, for the development of successful and sustainable models of local level natural resource management. Resource managers and planners lack access to relevant data on indigenous production and management by local communities.
31. The baseline situation is in general very supportive of the project, and provides a sound basis for the identification of incremental costs. The baseline includes indigenous management knowledge and institutions, local and national level NGO's and their activities, local government capabilities, and national level policies and programmes. The baseline activities and programs address ultimate causes of biodiversity loss, but need strengthening to be brought to an effective level of operation. Table 2.2 Annex IV provides the logical link between threats, root causes and components that have been designed to address the threats.
32. Despite the considerable investment that has been made in research on arid and semi-arid areas of Africa, e.g. the findings from IPAL, in researching various dimensions of the pastoral economy, including the role of indigenous vegetation, the biodiversity significance as well as its role in the maintenance of dryland ecosystems, the resulting information has not been adequately applied to ecosystem management in arid/semi-arid zones of Africa. Building upon this and other baseline investments, this project seeks to highlight the utilisation and application of that knowledge through demonstration, model building and replication to achieve global environmental benefits.

RATIONALE AND OBJECTIVES

Global Environment and Development Objectives

33. The global benefit is the conservation of biodiversity by developing an appropriate system of natural resource management, which reverses the present trend of degradation by establishing sustained production systems within the agro-pastoral and pastoral economy of the arid zones. A regional comparative approach will be taken, based on a number of demonstration sites in the Kalahari-Namib region, the Somali-Chalbi region, and the Sudano-Sahelian region. The project will therefore develop models to reinforce in situ conservation of biodiversity of plants and animals through halting of land degradation. The knowledge gained from these three demonstration areas will be available for replication in order to help sustain this unique ecosystem. Global benefits will be assured by selecting sites that are representative of the different habitats and ecozones in arid and semi-arid Africa, and are sites that have a higher probability of success in developing replicable models. A secondary global benefit is to increase plant biomass, both above- and below-ground, which improves resilience to drought, and potentially produces benefits in climate change.

34. The domestic benefits of the project accrue from rehabilitated lands and sustainable management systems in the 7 sites, plus development of models applicable to the other arid zones of the countries. In addition, there will be an improvement in the standard of living of the communities by demonstrating and adopting appropriate natural resource management systems that incorporate the use of indigenous knowledge. The local communities will also be assisted in utilising local renewable resources, e.g. water and fuelwood, to diversify their economic base, including the development and marketing of range products, to reduce overexploitation of the indigenous vegetation and erosion of soil.
35. The project activities will be achieved by carrying out a carefully co-ordinated demonstration program of development and sustainable use of land, water and vegetation resources, based on a synthesis of the value-added by the IPAL guidelines and other approaches. The project advocates improved animal husbandry by integrating indigenous traditional knowledge and modern science, including regulation of livestock distribution and improvement of marketing. The project will also rely upon the positive experiences acquired in its demonstration sites in the management and rehabilitation of the arid lands, as well as incorporating a high degree of flexibility to ensure sustainability of the indigenous natural resource management system by creating strong partnerships with the local pastoral communities.
36. An integral complementary part of the project will be a targeted research component, mainly funded by cofinancing, aimed at solving major issues of land degradation in the arid lands. The principal task of the targeted research will be to train local personnel, design monitoring activities, conduct the analysis and synthesis of existing data and collect additional data on indigenous vegetation of arid lands in direct relation to the project components. Closely related to this will be regional mechanisms to ensure that research findings are communicated to stakeholders and policymakers in the three countries. The mechanisms will address issues relating to use of indigenous knowledge management systems and the use of models to communicate scientific findings to local populations.
37. The logical framework annex (annex II) identifies verifiable performance indicators and milestones that were developed in consultation with all partners and which will enable the measurement of progress towards projected outcomes.
38. The project is integrated into national programs and plans, since it addresses the baselines programs and policies in each country relating to the improved management of arid and semi-arid lands. GEF funding is sought to take advantage of the comparative strengths of each country's knowledge base, to bear on a regional synthesis of experiences in arid and semi-arid lands. Past approaches to improved management of arid and semi-arid lands have tended to be individual country oriented without the benefit of lessons learned in other countries and to pay only token attention to participatory development and the integration of indigenous knowledge. In the past, less attention has been given to the needs of mobile pastoral communities.

Linkage of GEF Programming Approach to Problems

39. The project activities are designed in accordance with the guidelines provided by the Operational Programme 1: Arid and Semi-arid Zone Ecosystems of the biodiversity focal area. The framework offered by the follow-up to the STAP Workshop on Land Degradation, approved by the GEF Council in May '97, provides the background to project activities as they relate to this cross-cutting theme. Beneficial results are also expected to indirectly address the focal areas of climate change and international waters.

40. The analysis of direct and indirect causes of biodiversity loss and land degradation has identified a number of barriers that must be overcome before biodiversity conservation can be sustained on rehabilitated lands (See Tables 2.1 and 2.2 in Annex IV on Root causes to Biodiversity loss and Land Degradation, and Threats and Root Causes).

PROJECT ACTIVITIES AND EXPECTED RESULTS

Relationship between components

41. All the components are closely interrelated and are critical for the management of indigenous vegetation in arid/semi-arid ecosystems. The project design has taken into consideration activities that facilitate the integration of project components between demonstration sites. Component 1 focuses on the establishment and/or strengthening of appropriate indigenous management systems and is strongly linked to Component 3, which seek to rehabilitate degraded lands with indigenous vegetation species and develop rational management and sustainable use of biodiversity through community participation. Component 2 seeks to establish a regional arid zone biodatabase to facilitate better management of dryland resources. Component 4 addresses improved livestock production and marketing and the provision of alternative livelihoods. Component 5 and 6 focus on technology transfer and applied research and will support the other Components. Component 6 is very closely linked to all the other components in that the activities of this component build on the needs and outputs emanating from them. Detailed explanation of the activities and anticipated results are presented in the logical framework in Annex III.

Component 1: Establishment and Strengthening of appropriate indigenous management systems.

42. The project will facilitate the creation and strengthening of community-based representative management committees in the demonstration sites to take full responsibility of managing the indigenous vegetation. Already existing societal management structures acknowledged by the communities and the states should be the basis for creating indigenous management authorities. The role of women in these decision-making structures will be clearly considered as they are the principal users. In addition, the project will recognise that most local communities are not homogenous, and therefore will ensure effective participation by all stakeholders using state-of-the-art methods in participatory planning (e.g. Participatory Learning and Action).
43. Special attention will be paid to strengthening the capacity of indigenous range managers (herdboys, scouts, trackers, elder councils etc.) There will be a need to establish a partnership between the communities, the Governments and the project. The communities will then be helped to develop management master plans that would accommodate the need to conserve and rehabilitate vegetation, develop land-use plans and resolve conflicts within and between communities. Since these types of plans are dynamic they need to be continuously revised and updated. The plans should where necessary incorporate traditional conventions which have existed before the initiation of the project. The project will strengthen protocols on grazing, sharing water points and fodder reserves. The master plans provide authority to the communities of the demonstration sites to regulate and control access to home range key resources. In Botswana and Mali the policies to define the authority of local communities to take responsibility for the local land use are part of the Baseline, while in Kenya the legal framework is being revised to deal with these issues. In the case of Mali and Kenya, the special needs of mobile pastoral communities will be addressed.
44. Indigenous methods of conservation will be identified for each resource and the communities helped to develop conservation measures. In situ conservation would also apply to rare plant and animal species, which are being threatened with overexploitation. The basis will be development of

community biodiversity registers that identifies all plant and animal species within each demonstration zone, which the communities consider as being threatened. The community biodiversity registers will contribute to building of biodiversity database for each area. The registers will identify each plant and animal species, describe their habitats, types of uses, the socio-cultural values and form of management necessary for conserving them. As part of the community education, important plant specimens will be collected to establish community herbaria. Local incentives for conserving biodiversity will be built into the project design through participatory assessment of the perceived values of biodiversity and economic benefits from a diverse genetic base, and documentation of indigenous technical knowledge for the benefit of the younger generations.

Component 2: Establishment of a Regional Arid zone Biodatabase.

45. The project will establish a participatory process of information collection, analysis and use, leading to a regional Arid Zone Database. This will facilitate the collation and recovery of considerable investments in relevant data on indigenous production and management systems, which is currently trapped as raw data. This will be supplemented by baseline data on the socio-economic situation of the demonstration areas, analysed through existing (Kenya and Botswana) and installed (Mali) GIS systems. This component will compare the different methods in participatory planning in order to develop a method for local, participatory collection and analysis of data, applicable to the three countries. This includes an assessment of the extent and trends of land degradation through interpretation of aerial photos, satellite imagery and ground surveys. These data will contribute significantly to the integrated management of land, water and biodiversity. They include mapping of key resources; herd migration routes; patterns of settlements; understanding relationships between different pastoral and agro-pastoral groups of the demonstration sites; the distribution of water points, traditional rules and regulations for controlling access to pasture and water; delimitation of the territorial boundaries of the participating communities (or groups); and the definition of the demonstration site boundaries.

Component 3: Rehabilitation of indigenous vegetation and degraded lands.

46. The most effective way of rehabilitating land and vegetation is through the reduction of overgrazing and over-exploitation of natural vegetation around settlements in the demonstration sites as a result of the establishment of appropriate management systems. In each of the demonstration zones a range of measures may need to be used. The participatory assessment exercise (Component 2) involving the local communities, will contribute to the formulation of management master plans. Decisions to protect some over- utilized grasslands and woodlands to allow regeneration or decisions to re-seed some localities, or to plant trees, should be carefully balanced. Different tree planting methods and ways to enhance germination and survival if indigenous species will be tested, including natural regeneration and protection of natural seedlings, local, communal or private nurseries etc. Wherever possible, ecosystem rehabilitation through sound management of natural regeneration should be the goal. However, in some cases there may be a need to stabilise soils to prevent further erosion, involving the utilization of indigenous knowledge and community participation. Water harvesting techniques could be utilised, wind breaks constructed and sand dunes stabilised. Where appropriate, water points may need to be established to promote optimum use of rangelands. Vegetation rehabilitation will be carried out in Mali by the use of demonstration enclosures around settlements where optimum integrated management of soil, water and vegetation will test the possibilities for the area. These plots will be compared with similar areas under continuous traditional use with non-fencing management in the other countries. A close monitoring of the results of these activities will be necessary in order that the communities involved may identify the most effective measures for general use. This component may also include the establishment of fire management measures in Botswana.

Component 4: Improved livestock production and marketing, and provision of alternative livelihoods.

47. The activities under this output are aimed at increasing economic diversification and alternative livelihoods for the pastoralists and agro-pastoralists. The project will provide alternative means of livelihood by diversifying the economic base for rural communities, e.g. through bee keeping, honey production and handicrafts in the demonstration sites. This will be done through development of investment programs and establishment of self-help funds and community-based services. The project will demonstrate the possibility of improving the access to information and the infrastructure for marketing live animals. An additional role of the project is to facilitate policy reforms on livestock production and marketing of range products.
48. This component will work on increasing income from traditional herds by improving the feed resources for animals selected for the market, including dairy production. This will be done through, for example, irrigated fodder banks and establishment of fodder reserves that are linked to traditional drought reserves. In Mali, irrigated fodder may be tested around boreholes. Already, pastoralists in the Niger River Valley depend on crop residues from irrigated plots as a major source of dry season fodder supplement for their livestock. Building on existing knowledge, the project will also demonstrate growing of fodder using irrigation. Suitable grass species including wild cereals, (e.g., Fonio (*Panicum laetum*), which is popular with pastoralists and agro-pastoralists in the Sudano-Sahel zone) will be selected and tested in order to identify their potential for multiple use. The residues will then be used as livestock feed. Lessons learnt from the establishment of revolving funds in the last decade will be incorporated into the design of these funds. Discussions will be held through the Appraisal phase of the project to determine the possibility of obtaining cost-sharing from the local communities for the self-help funds.

Component 5: Technology Transfer, Training and Regional Comparative Learning.

49. An important part of this project is the testing of management systems. As the range and indigenous management systems are developed on a representative community basis there will be a need for training, the articulation of lessons learned and the sharing of experience within and across the various demonstration sites to ensure regional comparative learning. Community-based natural resource management committees will be given direction and specialised training for their new tasks and roles. Seminars and workshops will provide additional skills necessary to implement the planned activities. Exchange visit and joint workshops will allow institutional arrangements, tools and technologies to be shared between communities.
50. The project will demonstrate appropriate energy saving technologies to conserve woody vegetation from being overexploited for fuel. Woodlots, preferably composed of quick growing bushy woodland for providing fuel wood and construction materials will be established, and energy saving devices will be developed and adapted to local conditions and needs. This activity will ensure maximum biomass recycling in cultivated and non-cultivated rangelands.
51. This component will also focus on fostering exchange of experience and comparative learning at the regional level, including workshops, seminars, exchange visits and documentation.
52. Schools in the project sites will be involved in Environmental Competitions focusing on halting land degradation where the best school gets a trophy. Young Environmental Clubs will be set up focusing on halting land degradation using projects results. Environmental Management Committees comprising different villages will also compete for Environmental Conservation trophies and other

incentives accruing as a result of application of project results. Project's results will be translated into local languages for wider applications. Mass media that will involve the use of photography, dailies, newsletters, videos, television, radio, slides, documentary films and posters will be intensively used to deliver messages on land degradation and how it can be halted. Field days that include tree planting, Environment day, Water day, Workshops, Seminars, field tours will be further used to disseminate land degradation information.

Component 6: Targeted Research

53. Targeted research will be an important and integrated part of all the project components, and will be carried out in collaboration with the communities, local universities and research institutions as well as with universities outside the three countries involved. The University of Oslo will be playing a coordinating and fund-raising role in this connection. A combination of scientific and indigenous knowledge is needed to implement the various activities specified in components 1-5. Applied research is needed in the following fields: indigenous resource management (e.g. develop participatory planning methods, develop community biodiversity registers and community herbaria); range habilitation (e.g. testing suitable indigenous plants for range rehabilitation, water harvesting techniques, soil stabilisation, ecological economic evaluation); energy saving technologies (e.g. develop alternative technology transfer); livestock marketing alternatives (e.g. marketing information, policy formulation, irrigated fodder crops) and technology transfer (e.g. training seminars, conferences or workshops). In addition, component 2 (Establishment of arid/semiarid zone database and GIS) will be strengthened by co-financing and through the establishment of a database on natural and socio-economic aspects (for which GIS will be an important tool). This can be used as a basis for comparative analysis with a regional as well as a local focus, which together will serve as a platform for further monitoring of the system. Personnel (including students) may visit institutions in as well as outside Africa, as part of the training component of the project. Annex VI provides an overview of examples of topics that could be taken up and how the Targeted Research component links up to the other components of the project.

RISKS AND SUSTAINABILITY

Risks

54. The project does not face any major risk, which might prevent it from being carried out. However, there may be negative externalities, which could handicap the achievements of the project's objectives. Some natural resource management activities might be at risk if severe long-term drought and other natural disasters were to occur. The project will attempt to address this issue with many activities that directly and indirectly enhance the local population's ability to buffer the impact of droughts and other natural disasters, such as indigenous vegetation rehabilitation, sustainable management systems, improved income generation and alternative livelihoods.
55. Elements of community participation, which are important for the project, include respect of land rights of the participating communities; proper management of the production systems introduced, as well as the willingness to implement new ideas and adopt new technologies. The communities must respect the agreements/protocols undertaken by the project.
56. As the project will be carried out through a highly participatory approach, involving relevant major stakeholders, communities in all of the project sites have been involved in consultations, and are very interested in co-operating and participating in the project. The project has been designed in such a way as to ensure that all major stakeholders have a role in the decision-making processes. In particular there will be gender sensitivity in the decision-making processes.

Sustainability

57. Assuming that the timeframe of the project is, in relation to the biological and socioeconomic processes, sufficient to ensure measurable results in most components after five years, the project activities will be sustained after project completion. The presence of substantial Government contributions (in kind as well as in cash) confirms Government commitment to financial sustainability of the project in these countries. Government willingness to promote and provide an enabling environment for the project (e.g. civil security, tax exemptions for the project and disbursement of financial commitments) is important for the success of the project. In addition, the timely and flexible disbursement of committed funds will be critical in ensuring success.
58. The goal is to mobilise indigenous knowledge and provide technology and understanding to address land degradation problems and restore biodiversity in the demonstration areas as a basis for expanding these activities to other parts of arid and semi-arid lands of Africa. If the project is successful, it will provide the basis for replication both within the countries and elsewhere in arid Africa. Given the severity of land degradation in this zone, and if the project is successful, it will provide the basis for ongoing sustainable land and biodiversity management. Initial consultations with the communities in the project sites have revealed that the communities are well aware of the natural resource management problems that contribute to land degradation. It is assumed that the national counterpart institutions (Government as well as scientific) have the necessary capacity and resources to absorb and sustain the project results after the finalisation of the project.
59. There is also ample evidence that when communities are given a clear mandate to manage resources, the objectives are achievable. Therefore, this project will give communities autonomy to determine activities that can halt land degradation and thereby contribute positively to their economic well-being. Since in most project sites there are viable, traditional institutions, it is clear that communities can be grouped into management committees representing communities which decide on the wise management of biophysical and socio-economic resources, utilising indigenous knowledge. Some relevant policies and legal frameworks are now in place, but specific local use, marketing and other policies, which can further empower local communities to gain ownership of resources need to be in place to ensure sustainability of the project. Improved returns from livestock sales can further enhance the ability of local communities to sustain the successful results of the project. Finally, capacity-building of the local communities in environmental conservation blending it with indigenous knowledge through field days, workshops and seminars, is a critical avenue of popularizing the concept of indigenous resource management.

STAKEHOLDER PARTICIPATION AND IMPLEMENTATION ARRANGEMENTS

Stakeholder Participation

60. The project is based upon a participatory approach to improve indigenous vegetation management, involving the active participation of different stakeholders in all aspects of project design, implementation, monitoring and evaluation.
61. In the participating countries, a wide variety of stakeholders have interests in natural resources use including the sustainable utilization of indigenous vegetation, biological resources, water resources, and the global environmental impacts of rangeland use, including climate impacts. These stakeholders include farmers and agrosilvo-pastoralists, who practice subsistence agriculture; sedentary livestock owners and transhumance pastoralists; community-based organisations and non-

governmental organisations (NGO's), government technical administration at both the central, district and community level. Global interests in biological diversity and climate change are held by international organisations, including the United Nations. Annex V provides a detailed analysis of stakeholder participation.

62. **Direct beneficiaries** of the project will include the rural population – women, men and youth living in the project areas. The project has been designed with their direct inputs. Most of the project activities will be implemented directly by the direct beneficiaries of the project.
63. Overall, it is estimated that the project will directly impact on over 180,000 persons in the project demonstration sites. In Mali, the total population affected directly is 100,000 people, 50% of which are transhumants. In Kenya, a total of 60,000 people, of which 50 % are transhumants are affected, and in Botswana the total population directly targeted is 20,000, none of which are transhumants. The local stakeholders living in these communities, including women, will benefit from increased control over their natural resources as well as training, technology transfer, development of skills. Opportunities will also be provided for the local stakeholder to benefit from techniques and methodologies being employed in various parts of Africa which can be applied in their own local situations. These activities will lead to improved rangeland and indigenous vegetation management, building of local organisational capacities and biodiversity conservation.
64. **Secondary beneficiaries** will include rural residents, beyond the target communities. In addition, long-term benefits will accrue to stakeholders in other parts of the arid/semi-arid zones of Africa once the project results are replicated.
65. Project preparation, which has taken place over a period of 14 months, has involved consultations and site visits with technical, district and local government officials, with local indigenous leader and chiefdoms in the various project areas, a wide cross-section of community groups including women and youth and community-group organisations, village elders/leaders, representatives of village committees, NGOs as well as the research community, led by the University of Oslo. The project document has been prepared by the three participating countries, supported by national and international consultants, the University of Oslo, UNEP and UNDP. In Botswana, the Range Ecology Unit of the Ministry of Agriculture has been responsible for programme development, whereas in Kenya and Mali, the National Environment Secretariat (NES) of the Ministry of Environmental Conservation and the Ministry of Environment, respectively, assumed responsibility for programme development.
66. Throughout project implementation, working relations and collaborations will be maintained with local and International NGO's and bilateral agencies operating in the demonstration zones dealing with environmental conservation and community-based indigenous vegetation management. The local stakeholders will be encouraged to form community management structures for decision making and implementation at site levels, for negotiation and dialogue with other Stakeholders. These committees are the repositories of environmental matters of the pastoral communities. The rural communities and NGO's will be further involved in a self-monitoring and evaluation exercise in order to contribute to overall project decision-making.

Implementation and execution arrangements

67. The project will be implemented jointly by UNEP and UNDP. Detailed implementation arrangements will be finalised during project appraisal. The division of responsibilities between the two Agencies will also be determined during the appraisal phase. The administrative arrangements for joint implementation of projects are currently being worked out between the two agencies.

68. A Regional Coordination Unit (RCU) will be established, directed by a Regional Coordinator, recruited from one of the participating countries in collaboration with UNEP and UNDP, the University of Oslo, the collaborating regional secretariats and the participating countries, with an assisting expert. The Regional Coordination Unit (RCU) will be located at the site of one of the National Executing Units and will have as some of its main functions *inter alia* the day to day management and overall co-ordination and administration of the regional project activities; serving as a link with other international and regional projects; and serve as the secretariat for both the Regional Policy Steering Committee and the Technical Advisory Committee. It will be in permanent electronic communication with the three National Project Units (NPU) and the University of Oslo.
69. The RCU will be supported by a Regional Policy Steering Committee (RPSC), which will provide overall policy guidance, comprising of the Ministers of the Ministry of Agriculture in Botswana, the Ministry of Environment in Mali, and the Ministry of Environmental Conservation in Kenya, plus a representative from the University of Oslo, a community representative from each of the participating countries, a representative from the Regional Secretariat collaborating with the Project and a representative of UNEP. The RPSC will be chaired in turn by the relevant Ministers from the participating countries. The Regional Coordination Unit, along with the GEF operational focal points of the participating countries, will serve as the Secretariat for the RPSC. The Technical Advisory Committee (TAC) consisting of selected experts from the scientific, research and training community under the chairmanship of the University of Oslo, will provide advice to the RPSC on particular issues. The RPSC will meet annually, to evaluate the results obtained, and approve the annual work programme and budget of the Regional Co-ordination Unit (RCU) and National Project Units (NPU); to provide guidance and take the decisions necessary for the proper operation of the project, in conformity with its objectives and approach. The TAC meetings will take place annually and otherwise as often as necessary, in order to evaluate the project status and to make adjustments for the appropriate technical implementation of the project. The RCU will prepare the documents for the RPSC meetings. All coordination bodies will constitute an integral part of existing entities in the countries, so as to ensure maximum national participation.
70. The RPSC will also co-ordinate the research component whereas the University of Oslo will be the lead agency for networking collaborating with other research institutions and universities within and outside the region. Furthermore, training of higher education will be organised through the University of Oslo. This link is considered important for the co-financing of the research component and training.
71. Each country will set up a National Project Unit (NPU) for the project, comprising of a National Project Leader (NPL), a Financial and administrative assistant, a Secretary, a driver and a clerk. The NPUs will be responsible for facilitating and coordinating project execution at the national level, in collaboration with RCU. The NPU will be supported by extension staff in all the specific project sites. The NPL will be responsible for the overall co-ordination and implementation of country-level activities and supervision of the project and support services at the national office. Other responsibilities of NPL are to maintain linkage between the national and the regional office and the research component and organisations, to organise the national committee meetings and training (e. g. seminars and workshops) and to produce and disseminate the project reports.
72. At the national level, two meetings will be held every year. During these meetings, project progress, implementation procedures and strategies will be discussed and communicated to various stakeholders. Those attending the meetings will include: NPL, field managers, representatives of community groups and NGO's and the regional coordinator who is to attend at least one of the

national meetings in each country every year. At field sites level, quarterly meetings are to be held and attended by project staff and the community stakeholders.

73. National Advisory groups for project implementation will be established in each participating country to assist and advise the NPU. The project is designed to be executed by local community groups and NGO's where they exist, with the support from Government technical services. The project staff and the Technical Advisory Committee will develop specific criteria for the final selection of communities and NGO's to participate in the project. Once this is done and the specific community groups and NGO's are selected, participatory project launch workshops will be held at the local level to determine the nature and involvement of the communities.
74. Project resources will be allocated to organise and consolidate community structures. This will include an enhancement and revitalisation of indigenous knowledge, with a view to develop the capacities required for the sustainable management of natural resources in general and more specifically indigenous vegetation, on the contractual basis of support contributed by the project and the technical framework supplied by the public services.
75. Guidelines will be drawn for contracting NGO's, local research and training institutions in order to provide support to rural communities. Representatives of local communities and NGO's will be co-opted in the Technical Advisory Committee. In Regional and Local Committees, representatives of local communities and NGO's will be present. Finally, elected members of National Assemblies and elected local leaders will be co-opted in order to strengthen the grass-root support.
76. In the demonstration zones, community participation will build upon existing indigenous structures, which vary from highly egalitarian social structure of Chiefdoms of the Botswana and the Malian societies to the government administration structure of the Kenyan communities. Project implementation will be the mandate of the project staff, the rural population and NGO's with support from government officials.
77. In addition, working relations will be established between research institutes and universities, in the three countries in collaboration with the University of Oslo. Links are also established with relevant and GEF-related programs undertaken by consortia of national and international organizations such as Desert Margins Initiative (DMI), with ICRISAT as the lead agency, and People, Land Management and Environmental Change (PLEC), which are utilising some of the recommendations of the IPAL Resource Management Guidelines.
78. The communities will participate in the implementation of activities related to rehabilitation of both woody and herbaceous vegetation, soil erosion control, crust breaking and construction of water harvesting structures, building of project infrastructures, (e.g. housing, offices, wells, etc.). They will also contribute to grazing management and controls and protection of wildlife habitats, provide animal transport and make their land available for demonstration activities. These contributions will mainly be in kind, and the modalities of participation will be defined in Action Plans prepared with the communities and approved by them. Community participation has been evaluated and incorporated in the budget by demonstration sites, and the physical outputs of the project will become the property of the communities.

INCREMENTAL COSTS AND PROJECT FINANCING

Incremental Costs

79. Incrementality of the project is based on the fact that the three countries are faced with constraints and will need additional assistance to be able to take advantage of synergies and lessons from other countries to develop sustainable models for indigenous vegetation rehabilitation. Therefore, the incremental costs will be able to ensure the development of appropriate and sustainable models that would eventually generate more global benefits in biodiversity conservation.

Project Financing

80. Project financing is projected to come from a number of sources, namely host country support; through the University of Oslo, Norway and the GEF incremental cost financing. Additional resources are being solicited from a number of potential donors who have expressed interest in co-financing the project. The total project costs, excluding PDF-B, is \$13.054 million of which \$8.724 million is GEF increment, US\$2.150 million is governments' contribution, \$1.680 million is University of Oslo co-financing and \$0.5 million other co-financing. Table A outlines the project cost by component.

Table A: Summary of Total Cost by Project Components – US\$ millions

Component	Government Contributions	GEF Increment	University of Oslo co-financing	Other co-financing	TOTAL
1	0.575	1.500			2.075
2	0.250	0.600			0.850
3	0.125	2.550			2.675
4	0.300	1.190			1.490
5	0.700	1.650			2.350
6	0.200	0.300	1.680		2.035
Appraisal Mission	-	0.060			0.060
Monitoring and Evaluation	-	0.140			0.140
Support Cost	-	0.734			0.734
TOTAL*	2.150	8.724	1.608	0.500	13.054

*Does not include PDF-B costs.

MONITORING, EVALUATION AND DISSEMINATION

81. A monitoring and evaluation programme will be an integral part of the project, in that it will allow regular and in some cases continuous feedback on each activity and allow adjustments to be made as needed. Three types of monitoring and evaluation will be used, formal, informal and scientific. An initial Participatory Rural Assessment to identify the main leaders from key stakeholders, a mid term formal evaluation, at the beginning of the third year of the project and an end of project review will be key components of the formal review.
82. Scientific monitoring and evaluation will also be a critical element of the overall project and evaluation programme. It is envisaged that through implementation of the activities, measures of achievement will be indicated by environmental accounting of biodiversity through increased restoration of degraded soils, improvements in soil nutrient contents, increase in vegetation cover, increase in biomass of range vegetation, increased forage production by irrigation and increased soil water after the five years. The return surveys of project sites to be carried out after 5 and 10 years will be compared with surveys undertaken during the project phase. The national and regional reports will provide means for verifying the information.
83. Through periodic evaluation reports, numbers of established and active community institutions and improved services for the communities will be assessed. Adoption of new production methods and household industries together with alternative economic activities introduced in the project areas will provide a basis for project performance assessment.
84. The community-based action plans and master plans prepared for each demonstration site and periodic monitoring of their implementation will be the measure of achievement. Training courses held and training materials developed will indicate levels of enhanced capacity of local communities in natural-resource management.
85. The verifiable indicators of project achievement identified in the logical framework will guide the type of reporting required. Six monthly reports will be prepared by each National Team Leader on the feedback and direct observations in the field and transmitted to the Regional Coordinator for review and comments. The reports will address progress and obstacles and identify necessary adjustments

and timetable for the next six months period. The reports will also form part of the Regional Coordinators progress report to the Regional Project Steering Committee.

86. Project monitoring will be undertaken by the project staff through the use of the project logical framework and the established project management systems at stipulated periods. Monitoring will also be part of the research component.
87. The economic benefits achieved in reducing soil loss, increasing soil water infiltration, improved crop residue production and applying livestock manure to improve soil nutrients can be estimated (see incremental cost arrangements). Moreover, an improvement of the resilience to drought results in greater secondary productivity and an increase in the monetary values of livestock. By the suggested methods economic gains achieved per unit area for increasing livestock forage can be determined. By the same token, drought loss of livestock and its financial implications can be projected. Project performance indicators will be used to evaluate project progress based on project reports, review missions and stipulated project implementation phases. Project results will be disseminated through technical reports, newsletters, seminars, workshops and media as outlined in the project document.
88. The results of the project will be disseminated through environmental educational activities, and mass media campaigns, public competitions and field days. All stakeholders, including Communities, Project Staff, Government Ministries and Departments, NGOs, Research Communities and Donors will also disseminate land degradation results through detailed technical reports and briefs of the project.

LESSONS LEARNT

89. The first lesson from past, present and ongoing projects is that stakeholders must be fully involved from the design, implementation and subsequent evaluation and monitoring phases of the project. The "Bottom-Up" approach, where projects emanate from the communities rather than from national capitals, appear to be successful. Involvement of all gender members of the communities is a must for projects. Incentives should be provided to local communities even if it is on food for work basis so that they can have interests in the projects. The current thinking in non-equilibrium models of managing rangelands coupled with indigenous knowledge should be revisited. In view of the sedentarized nature of the current pastoralist communities, earlier recommendations of water distribution points should be reviewed. Due consideration must be given to reviewing and changing policies related to land tenure, land-use plans, livestock production and marketing, alternative livelihoods, and alternative energy sources.
90. The project document has been reviewed by a STAP Roster Expert (Annex III); who agrees that the project is scientifically and technically sound, in that: it is based on sound consideration of existing scientific information; land degradation research components and problem solving is integrated; the testing of natural resource management systems is an integrated part of the project; the objectives, indicators and means of verification in the logical framework matrix makes it possible to monitor and evaluate project activities and results; the Project Advisory Committee will provide the project with the necessary advise.
91. The reviewer also identifies the replication potential of the project as an advantage as well as the stakeholder participation and the participatory approach, which is central to the project. The latter will contribute to the sustainability of the project as indigenous knowledge constitutes the basis of the solution to land degradation problems in Africa.

ANNEXES

- I. Incremental Cost Annex
 - II. Logical Framework Matrix
 - III. STAP Roster Technical Review
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- IV. Root Cause Annex
- V. Public Involvement Plan Summary
- VI. Targeted Research Annex

ANNEX I.

INCREMENTAL COSTS

1. The overall goal of this project is to develop sustainable methods of combating land degradation in order to conserve biodiversity, which in turn will boost the local pastoral economy of the project areas.

Global environmental objectives.

2. The eventual replication of successful and sustainable models towards control of land degradation, will contribute to restoring soil fertility and the indigenous vegetation, will provide local as well as global benefits and thereby contribute positively to the fulfilment of the international conventions on biodiversity, climate change, desertification and international waters,.

Baseline.

3. The arid and semi-arid zone of Africa is characterised by low-diverse but unique flora and fauna. Environmental conditions tend to be uniform over vast geographic areas and most species occur over broad geographic ranges. Since species and gene pools that are well adapted to drier areas are few in number, the relative loss of biodiversity in arid zone environments is particularly great. The species in this ecosystem have unique morphological, physiological and genetic characteristics that are specific to arid and semi-arid Africa, and unique in the world.
4. The baseline situation in all project areas as in the arid and semi-arid areas zone as a whole, is that there is pervasive land degradation and consequent loss of biodiversity. Given the high percentage of arid and semi-arid lands in the countries, each of the countries has over a long period developed policies and programmes directed to these ecosystems. Activities in the demonstration areas include Government programmes, national and local policies, NGO programmes and donor supported projects (Table B). The analysis, based on available information, shows that Government and other donor expenditures in the project areas are over US\$11 million a year of which US\$ 9 million is in Botswana and over US\$ 1 million a year in Mali and Kenya. However, much of this expenditure is in nation- or region-wide programmes and are generally poorly integrated across sectors, and not focussed on a comprehensive approach to community planning and action.

Table B: Annual Baseline Expenditures, estimates, US \$ 1000's.

	Component 1	Component 2	Component 3	Component 4	Component 5	Component 6	TOTAL
Botswana*	3000	300	1000	5005	30	100	9445
Kenya#	170	100	200	490	50	27	1037
Mali⌘	300	20	300	600	50	20	1290

5. = Based on project data for Botswana and Government expenditures in the project areas.
6. # = Represents approximately 70% of project activities in the area.
7. ⌘ = Estimated, based on available data.

8. Baseline policies in Botswana center around the agricultural policy (Agricultural Development

Policy, Policy on the Development of agricultural associations, Water Development Policy and Settlement Policy, on the use of agricultural resources and Alternative Livelihood Strategies, and on livestock marketing and agricultural products). Other policies relevant to the project relate to droughts (Drought Management Policies and Strategies), to land tenure (Tribal Grazing Land Policy), to forestry (Forestry Development Policy) and to wildlife management (Policy on Wildlife Utilization). Finally, the policy on science and technology defines the framework for scientific exchange.

9. At the local and national levels, several NGOs in Botswana have activities relevant to the project in terms of awareness raising, and applied research and monitoring such as the Kalahari Conservation Society, Forum for Sustainable Development, Forestry Association of Botswana, Thusano Lefatsheng/Terra Aid Botswana, Environment Watch Botswana, Veld Products Research and Botswana Society.
10. In Kenya, government policies and activities related to the project are framed through the National Biodiversity Strategy and Action Plan, the National Environment Action Plan and the bill before parliament on Environment, Management and Coordination Policy. The Forestry Water Resources Master Plans also provide guidelines towards relevant components. These national investment includes the seven year Integrated Project on Arid land (IPAL) in north east Kenya, the findings of which provide the basis of this project, representing GOK/GTZ investment of some US\$ 7m. Some of these findings have been implemented in the GTZ project in Marsabit and by NORAD in Turkana with investments of US\$3m in land degradation, forestry research and community training. The GOK has ongoing activities in the two region valued at US\$ 17,000 a year. Several NGOs in Kenya have field level activities that will be directly relevant to the project, including Pastoral Shelter, Farm Africa and Food for the Hungry International. Two national level NGOs can also provide support in terms of awareness raising and training, Natural Resources Management Forum and Pastoral Integrated Programme.
11. In Mali the Plan of Action to Combat Desertification and the National Action Plan for the Environment provide the environmental framework for land degradation in drylands. In addition, several sectoral policies provide frameworks that address ultimate causes such as the National Plan for Rural Development, Domestic Energy Strategy, National Programme for Agricultural Extension and the Structural Adjustment Programme. In Mali the World Bank/GOM project on natural resources protection represent a \$5m investment and the project “Mali Nord-Est de Development de l’Elevage” is a multi-donor investment of \$14m. Several national and international NGOs are active in related issues such as pastoral livelihoods, and social services (e.g. IUCN, Care Mali and ACOR). The CNRST (National Centre for Scientific and Technical Research) is an umbrella organisation that groups all the research institutions in Mali.
12. From the foregoing analysis it is evident that the participating governments are committed to a number of baseline activities, such as policy reforms (e.g. decentralization process in Mali, the proposed Environmental Coordination and Management Bill in Kenya, and the Agricultural Development Policy and Tribal Grazing Lands Law in Botswana), rural development, research, etc. These baseline investments are deemed cost-effective in achieving domestic benefits, and provide the basis for the GEF incremental costs which provide the mechanisms for translating this investment into a mechanism which allows a cross-national approach to the problem of land degradation and loss of biodiversity in African arid and semi arid lands.
13. The GEF grant will provide incremental funding to complement the activities undertaken by the participating governments through the identification, synthesis and application of state-of-the-art knowledge in different approaches to demonstrate how globally significant biodiversity can be restored and protected through halting land degradation and the development of sustainable

management systems, thus contributing to the achievement of additional global benefits.

The proposed alternative.

14. The alternative involves rehabilitation of the degraded lands, using indigenous species and knowledge in order to develop successful models for conserving the globally important biodiversity of the arid zone demonstration sites in a participatory, community based approach. Because of substantial and ongoing biodiversity and land resources loss in arid lands, the project will focus on halting and reversing the loss, rather than specifically focusing on enhancing additional gains from biodiversity conservation during its lifetime. The project endeavors to fill gaps in previous approaches so that biodiversity conservation is achieved through viable and sustainable policies and activities enacted by the local communities and their respective governments. The activities generate additional domestic benefits by boosting the livestock based economies of these regions and creating possibilities for alternative livelihoods as well. The outcomes and experiences of the project can be used as a model for rehabilitation of similar areas in the countries involved, as well as other arid zones of Africa.

Scope of analysis.

15. The scope of analysis covers and identifies the strength of local traditional local institutional, the weakness in coping with the threats to biodiversity and pressures that lead to land degradation. The different projects related to the project zones are identified, and the proportion that directly impact the project sites are costed. In-kind and cash government contributions are considered as part of the baseline, because they would still be disbursed by the governments even without the project. The policies of the different governments, ongoing research by national level organs and work by NGO's are also considered part of the baseline. Although the baseline is cost-effective in achieving domestic benefits under present policy and institutional conditions, there are, institutional factors (constraints at the national level), and inadequate levels of capitalization at the local level which can be considered as barriers to the development of sustainable management models. Incremental costs are sought for removing these barriers and strengthening the baseline. The majority of project activities are substitutional rather than complementary, however, there are no discernable domestic costs associated with the project. On the contrary, there will be additional domestic benefits to be gained.

Country situations

16. In all three participating countries, land degradation and the consequent loss of biodiversity has been going on for a long period of time. During the last three decades, the areas have experienced several prolonged drought periods, coinciding with rapid population growth, which increases food and fuel demands and hence contributes to range and woodland degradation. Traditional management systems have been disrupted, and in many cases this has led to accelerated land degradation and biodiversity loss.
17. In all three demonstration areas, increased sedentarization of the nomadic population has led to severe land degradation in the perimeters of the settlements. In Botswana, the livestock grazing areas have furthermore been significantly compressed by cordon fences, resulting in over-exploitation of the remaining accessible vegetation. The increased pressure on the vegetation also means that regeneration after recurrent droughts is hampered. Combined with uncontrolled bush fires, this results in an acceleration of the loss of globally significant biodiversity. The arid areas in the three countries are the habitats of dryland species and gene pools of great importance for the livelihood of the local populations, who are completely dependent on the indigenous vegetation for their livelihoods, as well as for the global community.

18. There is a general tendency to consider the degradation of arid lands as an inevitable process, and this project aims at demonstrating that an integration of modern science and traditional management systems can arrest the current degradation trends and facilitate rehabilitation of degraded rangelands and their biodiversity. The project will benefit from the current decentralization process in Mali, and the increased interest in all three countries in combating land degradation.

Table 1.1. Total budget by year and component (GEF Increment and other, Government Contribution – US\$ million)

Component	Total	Year 1	Year 2	Year 3	Year 4	Year 5
1. Establishment of appropriate Indigenous Management systems, and in-situ biodiversity conservation.	2.075	0.300	0.675	0.650	0.350	0.100
2. Establishment of Arid Zone Biodatabase and GIS	0.850	0.150	0.250	0.300	0.100	0.050
3. Rehabilitation of Indigenous Vegetation	2.675	0.500	0.800	0.700	0.400	0.275
4. Improvement of livestock production and marketing, and provision of alternative livelihoods.	1.490	0.150	0.300	0.500	0.400	0.140
5. Technology Transfer & Training.	2.350	0.265	0.535	0.600	0.550	0.400
6. Targeted Research	0.500	0.100	0.100	0.100	0.100	0.100
7. Monitoring & Evaluation	0.140	0.040	0.040	0.020	0.020	0.040
8. Administration	0.734	0.150	0.146	0.146	0.146	0.146
9. Appraisal	0.060	0.060				
10. University of Oslo contribution.	1.680					
TOTAL (US\$ millions)	12.554	1.695	2.846	3.016	2.066	1.251

Table 1.2: Country budget by Component (GEF Increment and Other Contributions in US\$ millions)

Component	Botswana		Kenya		Mali		Total		
	Increment	Govt contrib	Increment	Govt contrib	Increment	Govt and other* contrib	Increment	Govt contrib	Increment + Govt contrib
1. Establishment of appropriate indigenous management systems and in situ biodiversity conservation.	1.500	0.350	0.500	0.075	0.500	0.150	1.500	0.575	2.075
2. Establishment of arid zone biodatabase and GIS.	0.150	0.100	0.150	0.100	0.500	0.050	0.600	0.250	0.850
3. Rehabilitation of indigenous vegetation.	0.825	0.050	0.900	0.075	0.825	0.00	2.550	0.125	2.675
4. Improvement of livestock production and marketing, and	0.375	0.100	0.375	0.100	0.440	0.100	1.190	0.300	1.490

provision of alternative livelihoods.									
5. Technology Transfer & Training.	0.500	0.400	0.500	0.150	0.600	0.150	1.650	0.700	2.350
6. Targeted Research	0.100	0.100	0.100	0.050	0.100	0.050	0.300	0.200	0.500
7. Monitoring and Evaluation.							0.140	0	0.140
8. Administration.							0.734	0	0.734
9. Appraisal.							0.060	0	0.060
10. University of Oslo contribution.							0	1.680	1.680
TOTAL	2.450	1.100	2.575	0.550	2.765	0.500	8.724	3.830	12.554

* Note that an additional US\$0.5 million "other" co-financing will be budgeted when it has been confirmed.

Table 1.3. Baseline, Alternative and Incremental Cost (US\$ million) (GEF and Government contributions and co-financing)

Benefit	Baseline	Alternative	Increment
1. Establishment of appropriate indigenous management systems			
Global Environmental Benefits	<ul style="list-style-type: none"> Improved domestic management systems able to contribute to models replicable within each country. Indigenous knowledge of local biodiversity available. Preservation of indigenous vegetation and biodiversity of vital interest and benefit to local populations. 	<ul style="list-style-type: none"> Development of a replicable model, based on a regional comparative analysis of results, leading to more sustainable use and management of biodiversity and natural resources in arid zones of Africa. Increased knowledge of globally significant resources and ecosystem processes. Through replication, contribution to the in-situ conservation of globally significant biodiversity. 	
Domestic Benefits	<ul style="list-style-type: none"> Viable indigenous management systems constitute an important basis for integration with scientific methods to develop sustainable management systems. Success of baseline activities constrained by institutional barriers, such as inappropriate laws and policies. 	<ul style="list-style-type: none"> Additional benefits accrued from lessons learnt in developing sustainable management systems for biodiversity and natural resources in arid and semi-arid lands, from regional comparative analysis, including better models for replication and sustainable management systems. Contribution to the removal of upstream barriers to the development of models. 	
Costs	15.850	17.925	2.075
2. Establishment of Arid Zone Biodatabase and GIS.			
Global Environmental Benefits		<ul style="list-style-type: none"> Systematic collection, analysis and application of information on biodiversity, indigenous knowledge and sustainable management on a country- and regional basis leading to a globally significant database. 	
Domestic Benefits	<ul style="list-style-type: none"> Collection and storage of some data on biodiversity, indigenous knowledge and sustainable management within the countries. 	<ul style="list-style-type: none"> Participatory and strategic compilation and assessment of locally generated information in the region, applicable within the countries. 	
Costs	0.200	1.050	0.850

3. Rehabilitation of Indigenous Vegetation			
Global Environmental Benefits	<ul style="list-style-type: none"> Some localised global biodiversity benefits from indigenous techniques for rehabilitation of indigenous vegetation. 	<ul style="list-style-type: none"> Improved and appropriate technologies for the rehabilitation of degraded vegetation and lands assessed and evaluated in different situations, leading to the development of widely replicable methods. 	
Domestic Benefits	<ul style="list-style-type: none"> Rehabilitated vegetation and lands for local populations. 	<ul style="list-style-type: none"> Rehabilitated vegetation and lands sustained in project sites and with demonstration value for neighbouring communities. 	
Costs	5.955	8.630	2.675

4. Improvement of Livestock Production and Marketing and Provision of Alternative Livelihoods			
Global Environmental Benefits	<ul style="list-style-type: none"> Viable traditional methods of fodder production available. 	<ul style="list-style-type: none"> Fodder production techniques appropriate to drylands tested and synthesised into widely replicable methods. 	
Domestic Benefits	<ul style="list-style-type: none"> Marketing structures and policies available. Traditional levels of income generated through marketing of livestock and its products, and other range product based industries. Traditional socio-economic networks and savings available. 	<ul style="list-style-type: none"> Improved marketing policy reforms facilitated. Additional economic opportunities and income possibilities developed. Self-help and revolving funds assisted in capitalization and capacity building. 	
Costs	27.475	28.965	1.490

5. Technology Transfer and Training			
Global Environmental Benefits		<ul style="list-style-type: none"> Transfer of technologies, information and models between the three countries, leading to a synthesis of appropriate models and technologies for wider application. 	
Domestic Benefits	<ul style="list-style-type: none"> Extension services geared towards technology transfer. 	<ul style="list-style-type: none"> Enhanced capacity of local community stakeholders and indigenous range managers in technical and institutional aspects for sustainable management of biodiversity and natural resources. 	
Costs	0.400	2.750	2.350

6. Targeted Research			
Global Environmental Benefits		<ul style="list-style-type: none"> Systematic, scientifically documented and sustainable 	

		management tools applicable in other arid and semi-arid lands developed.	
Domestic Benefits	<ul style="list-style-type: none"> Institutions and human resources available for conducting applied research in sustainable management of biodiversity. 	<ul style="list-style-type: none"> Enhanced scientific knowledge base and increased capacity of national research institutions. 	
Costs	4.459	6.639	2.188
TOTAL	54.339	65.959	11.620

Table 1.4. Detailed Budget by Activity

* Government contribution has been broken down by component, but not by activity.

** Does not include US \$ 0.5 million identified from “other” sources.

Components	Outputs	Activities	GEF Increment	Government* and other** contribution	Total
Outcome 1. Establishment of appropriate indigenous management systems for sustainable use of biodiversity and natural resources.	1.1. Appropriate indigenous Management systems identified, developed, established and strengthened.	1.1.1. Establishment of effective community based management committees, based on indigenous institutions.	0.200		0.200
		1.1.2. Preparation of management plans for the rehabilitation of rangelands and sustainable development in the project zones.	0.450		0.450
		1.1.4. Development of partnership conventions between the communities, the project and the Governments.	0.100		0.100
		1.1.5 Facilitation of land-use planning and of the resolution of Land-Tenure rights and conflicts.	0.300		0.300
		1.2. Indigenous conservation methods strengthened.	1.2.1 Identification, documentation, systematisation and strengthening of indigenous conservation methods.	0.200	
		1.2.2 Development of community biodiversity registers.	0.050		0.050
	1.3 Overexploitation of specific plant and animal species reduced.	1.3.1 Development of local incentives for biodiversity conservation.	0.200		0.200

		-----	-----	0.575	0.615
		Subtotal	1.500	0.575	2.075
Outcome 2. Establishment of arid/semi arid zone BioDatabase and GIS.	2.1 Historical and current knowledge of biodiversity and land degradation in the demonstration areas assessed in a participatory process.	2.1.1. Inventories of natural resources and interpretations of the situation over the past 40 years.	0.200		0.200
		2.1.2. Participatory socio-economic and needs assessment.	0.100		0.100
		2.1.3. Compilation of base data with the participation of local communities for monitoring and evaluation purposes.	0.050		0.050
	2.2 Regional perspective established, on biodiversity and land degradation issues.	2.2.1. Aerial photographic surveys, soil and vegetation cover mapping of all sites and regional analysis	0.100		0.100
		2.2.2. GIS equipment and support in Mali, linked to existing structures in Kenya and Botswana.	0.150		0.150
		-----	-----	0.250	0.250
		Subtotal	0.600	0.250	0.850
Outcome 3. Rehabilitation of indigenous vegetation.	3.1 Degraded rangelands/community territories in the project zones revegetated.	3.1.1. Community based management of spontaneous regeneration of plants, and tree planting, using indigenous species.	0.800		0.800
		3.1.2. Establishment of community and individual nurseries.	0.200		0.200
		3.1.3. Creation of enclosures in Mali and monitoring.	0.200		0.200
		3.1.4. Implementation of measures to control grazing including rotational grazing and using indigenous management techniques.	0.200		0.200
		3.1.5. Soil rehabilitation and reseedling with indigenous species.	0.300		0.300
	3.2 Fire management measures instituted.	3.2.1. Establishment of fire management measures, based on indigenous and modern techniques.	0.150		0.150

	3.3 Water management improved.	3.3.1. Improvements in water harvesting techniques, including water point improvement to assist grazing management and water spreading.	0.700		0.700
		-----	-----	0.125	0.125
		Sub-total	2.55	0.125	2.675
Outcome 4. Provision of alternative livelihoods and improvement of livestock marketing and fodder resources.	4.1 Improved market outlets for livestock, and income generation.	4.1.1 Development of economic opportunities in the marketing of livestock.	0.400		0.400
		4.1.2 Facilitation of marketing policy reforms.	0.150		0.150
	4.2 Fodder production improved.	4.2.1 Small-scale production of irrigated fodder for fodder banks and reserves.	0.300		0.300
	4.3 Economic base of the communities diversified and substantially widened.	4.3.1 Establishment of marketing outlets for range product based industries (multiple-use plants, hides, honey etc).	0.040		0.040
		4.3.2 Establishment of community revolving funds in the communities.	0.300		0.300
		-----	-----	0.300	0.300
		Subtotal	1.190	0.300	1.490
Outcome 5. Technology transfer, training and regional comparative learning.	5.1 Appropriate technologies transferred between countries.	5.1.1 Documentation, workshops and seminars at the regional level.	0.450		0.450
	5.2 Capacity of local communities enhanced in technical and institutional aspects.	5.2.1 Transfer of technologies for planting of individual and communal woodlots for fuelwood and construction timber, using indigenous species.	0.200		0.200
		5.2.2 Transfer of energy saving mechanisms.	0.100		0.100
		5.2.3 Introduction of technologies for general recycling of biomass.	0.100		0.100
		5.2.4 Workshops and training seminars for community stakeholders.	0.350		0.350

	5.3 Dissemination of results at local and national levels.	5.3.1 Environmental education through school programmes and competitions etc.	0.200		0.200
		5.3.2 Mass-media campaigns.	0.250		0.250
		-----	-----	0.700	0.700
		Subtotal	1.650	0.700	2.350
6. Targeted Research.	6.1 Development of rational, scientifically documented and sustainable tools applicable to these and other arid and semi-arid areas.	6.1.1 Research in indigenous management systems.	0.200		0.200
		6.1.2 Research in problems of range rehabilitation.	0.050		0.050
		6.1.3 Application of energy-saving devices to arid and semi-arid lands.			
		6.1.4 Feasibility studies of improving livestock marketing in the demonstration areas			
		6.1.5 Development of methods to communicate research findings to affected communities.	0.050		0.050
		University of Oslo contribution		0.200	0.200
		-----	-----	1.680	1.680
		Subtotal	0.300	1.880	2.180
7. Monitoring and Evaluation.			0.140		0.140
8. Administration.			0.734		0.734
9. Appraisal			0.060	0	0.060
GRAND TOTAL			8.724	3.830	12.554

**ANNEX II.
LOGICAL FRAMEWORK MATRIX.**

	Summary	Objectively verifiable indicators	Means of verification	Critical assumptions and risks
Objectives	To develop models for the conservation of biodiversity and rehabilitation of degraded rangelands, and to develop sustainable management systems using indigenous knowledge.	Substantive recovery of indigenous vegetation in project sites. Functional local natural resource management systems in place.	Surveys and reports at the commencement and after finalisation of the pilot project. Local community perceptions and feedback.	No major negative changes in drought patterns. No major political perturbations in the participating countries.
Outcomes (project impacts)	<p>1. Establishment of appropriate indigenous management systems.</p> <p>2. Regional and national data availability on indigenous production and management systems significantly enhanced.</p> <p>3. Indigenous vegetation in degraded rangelands rehabilitated, through reducing pressure on the vegetation resources.</p> <p>4. Provision of alternative livelihoods, and improved livestock markets and feed resources in other arid areas.</p> <p>5. Transfer of technology and information.</p>	<p>Local satisfaction demonstrated. Participatory process assured. Management plans meaningful and developed through consensus. Policy recommendations developed.</p> <p>Availability, quality and accessibility of databases. Data collection and storage capacity enhanced.</p> <p>Number of hectares rehabilitated. Bio-mass production per hectare. Qualitative improvement in vegetation and soils.</p> <p>Number and weight of animals sold per year. Availability of honey etc. on the market at reasonable prices. Policy recommendations developed. Increased income per household. Hectares of fodder production.</p> <p>Number of workshops and training seminars conducted at local level. Activities of community institutions and individuals showing follow-up. Amount and quality of information transferred</p>	<p>Project progress reports. Local community feedback.</p> <p>Databases.</p> <p>Project progress reports.</p> <p>Project progress reports. Government statistics.</p> <p>Project progress reports.</p>	<p>Continued incentive for the participation of the communities. Communal respect of management plans by local community and neighbors. Successful methods for integration of indigenous management with modern systems available.</p> <p>Data made available from various agencies and communities</p> <p>Communities provided incentives for participating in land rehabilitation.</p> <p>Governments co-operative in revising marketing policies. Alternative livelihoods acceptable to communities. Continued community willingness to participate. Co-operation from Governments.</p>

	6. Targeted research in the project areas used for developing methods for replicating the project findings in other arid areas.	between countries. Technical and scientific reports on sustainable management methods available. Number of trained researchers.	Reports, scientific journals.	Project findings replicable in other areas
Results (project outputs)	1.1 Management systems controlled by the communities.	Committees and management structures established. Management guidelines implemented.	Project progress reports, local perceptions.	No major political changes during the pilot project implementation. Co-operation from governments and other authority.
	1.2 Indigenous conservation methods strengthened.	Biodiversity registers and herbaria. Documented indigenous methods. Education of youth and community at large.	Progress reports and local perceptions. Assessments.	Indigenous conservation methods still viable.
	1.3 Over-exploitation of specific plant and animal species reduced.	Incentives developed for local communities to manage their resources on a sustainable basis.	Project progress reports. District surveys.	No negative interference from external agents, and undue market influences. Availability of data.
	2.1 Assessment of indigenous knowledge of degradation in the pilot areas.	Database created and made accessible to all stakeholders. Successful participatory assessments integrated in master plans.	Project progress reports. Special reports on historical knowledge.	
	2.2 Regional perspective established on biodiversity and land degradation issues.	Aerial photo and remote sensing analyses completed. GIS systems established and linked between countries.	Project reports and analytical documents.	Government willingness to co-operate on international sharing of info.
	3.1 Degraded rangelands/community territories in the project pilot zones revegetated.	Number of ha revegetated in the pilot zones. Bio-mass production increased by number of kg/ha. Soil erosion reduced. Dunes stabilised.	Project progress reports. Monitoring surveys.	No negative changes in drought patterns.
	3.2 Appropriate fire management measures established.	Number and extent of wildfires significantly under control and management.	Project progress reports. District surveys.	Government investment on fire fighting and control measures
	3.3 Water management improved.	Number of water structures created and functioning.	Project progress reports and local evaluation.	No negative changes in drought patterns.
	4.1 Improved market outlets for livestock and income generation.	Sales and turnover figures increased.	Project progress reports. District surveys. Government statistics.	Co-operation from Governments and other authorities on marketing policies.

	<p>4.2 Fodder production improved.</p> <p>4.3 Substantial widening and diversification of the economic base of the communities.</p> <p>5.1 Appropriate technologies transferred between countries.</p> <p>5.2 Capacity of local communities enhanced.</p> <p>6.1 Development of rational, scientifically documented and sustainable management tools applicable in other arid zones.</p>	<p>Labour allocation patterns. Amount of fodder produced. Number of hectares under production.</p> <p>Diversity of income possibilities in the communities.</p> <p>Successful meetings and documentation.</p> <p>Practical application of knowledge.</p> <p>Scientific documentation available.</p>	<p>Project progress reports.</p> <p>Project progress reports. District surveys. Government statistics.</p> <p>Project progress reports. District surveys.</p> <p>Project progress reports. District surveys.</p> <p>Project progress reports. Scientific reports.</p>	<p>No breakdown of boreholes in Mali. No negative changes in drought patterns.</p> <p>Alternative livelihoods acceptable by communities. No negative environmental impacts attending the operations of range product industries.</p> <p>No alternative opportunity costs to local population.</p>
Components/activities	Component 1: Establishment of appropriate indigenous management systems.			
	<p>1.1.1 Establishing of effective community based management committees.</p> <p>1.1.2 Preparation of master plans for the rehabilitation of rangelands and sustainable development in the project pilot zones.</p> <p>1.1.3 Development of partnership conventions between the communities, the project and the Governments.</p> <p>1.1.4 Facilitate land use planning and resolving of land tenure rights and conflicts.</p> <p>1.2.1 Identify, document, systematize and strengthen the indigenous conservation methods.</p>	<p>Committees operational and active.</p> <p>Master plans created and available.</p> <p>Conventions approved and operationalised.</p> <p>Land tenure conflicts less constraining for the communities. Land use plans available.</p> <p>Information catalogued and made usable by the new and old generation.</p>	<p>Project progress reports. Community consultations. District surveys.</p> <p>Project progress reports. District and Government reports.</p> <p>Project progress reports. District surveys. Government reports.</p> <p>Project progress reports. Community surveys.</p> <p>Project progress reports. District archives. Local perceptions.</p>	<p>Co-operation from local authorities.</p> <p>Community consensus obtainable.</p> <p>Co-operation from all partners.</p> <p>No major conflicts. Consensus reached among stakeholders.</p> <p>Strong local interest.</p>

	1.2.2 Developing community biodiversity registers.	Biodiversity registers available and in use.	Progress reports.	Strong local interest and local archives.
	Component 2: Establishment of arid zones Database and GIS.			
	2.1.1 Inventories and interpretations of the situation over the past 40 years. 2.1.2 Participatory socio-economic and needs assessments. 2.1.3 Compilation of baseline data with the participation of local communities. 2.2.1 Aerial photographic surveys, soil and vegetation cover mapping. 2.2.2 Establish GIS equipment and support in Mali.	Inventories prepared and accessible. Self-discovered and real assessments. Baseline data compiled in accessible reports. Soil and vegetation cover maps available and generated. Established unit Inter-country linkages functional.	Project progress reports. District archives. Local perceptions reports. Project progress reports. District archives. Reports and analyses. District and Government archives. Progress reports.	Data available and accessible. All stakeholders are able to participate. All stakeholders are able to participate. Surveys used for production of community management systems. No major constraints to inter-country communication.
	Component 3: Rehabilitation of indigenous vegetation.			
	3.1.1 Assisting spontaneous regeneration and tree planting using indigenous species on a community basis. 3.1.2 Establishing nurseries. 3.1.3 Creation of enclosures for experimental management in Mali. 3.1.4 Implementing measures to control grazing. 3.1.5 Rehabilitate soil and vegetation reseeded.	Number of trees planted, and survival rates. Number of nurseries established and operational. Number and area of enclosures established. Land degradation reduced and biodiversity conservation increased in enclosures. Significant improvement in land and vegetation stability. Ha rehabilitated. Survival rates.	Project progress reports. District surveys. Government statistics. Project progress reports. Project progress reports. Project progress reports. District surveys. Government statistics. Project progress reports.	No negative change in drought patterns. No negative change in drought patterns. No negative change in drought patterns. No negative change in drought patterns. No negative change in drought patterns.

	3.2.1 Establish fire management measures.	Indigenous methods identified and catalogued. Institutions (structures and regulations) for fire management. Infrastructure for fire management.	Progress reports and local perceptions.	
	3.3.1 Improving water harvesting techniques.	Availability of water for irrigation, watering and household purposes. Ground water surveys.	Project progress reports. Community consultations. District surveys.	No negative change in drought patterns.
	Component 4: Improvement of livestock production and marketing, and provision of alternative livelihoods.			
	4.1.1 Developing economic opportunities in marketing livestock.	Access to marketing information. Infrastructure established and functioning.	Progress report. Local perceptions.	
	4.1.2 Facilitate marketing policy reforms.	Marketing policy impacts evaluated.	Project progress reports. Government archives.	
	4.2.1 Developing small-scale irrigated fodder from indigenous plants, fodder banks and fodder reserves.	Fodder production increased. Number of ha. fodder reserves.	Project progress reports. District surveys and statistics.	
	4.3.1 Establishment of marketing outlets for range product based industries (plants, hides, honey etc).	Increased availability of range products on the market. Increased income per household.	Project progress reports. District and Government statistics.	
	4.3.2 Establish self-help revolving funds in the communities.	Self-help revolving funds established and capitalized. Number of new businesses established.	Project progress reports. District and Government statistics.	
	4.4.1 Testing of appropriate biomass recycling techniques.	Increase in soil organic matter content.	Progress report. Local perceptions.	
	Component 5: Technology Transfer, Training and Regional Comparative Learning			
	5.1.1 Documentation workshops and seminars at the regional level.	Success of knowledge transfers. Number of meetings and visits.	Project progress reports.	
	5.2.1 Planting of woodlots for fuel-wood and	Number of ha planted. Production figures.	Project progress reports.	

	<p>construction timber.</p> <p>5.2.2 Transferring energy saving devices and technologies.</p> <p>5.2.3 Introducing technologies for general recycling of bio-mass.</p> <p>5.2.4 Workshops and training seminars for community stakeholders.</p> <p>5.3.1 Environmental education through school programs and competition</p> <p>5.3.2 Mass-media campaign</p>	<p>Number of energy saving devices in use. Firewood requirements per household decreased.</p> <p>Tons of dung used as fertiliser Tons of bio-mass recycled. Pressure on range resources reduced.</p> <p>Number of training seminars and workshops held. Quality of training.</p> <p>Quality of training.</p> <p>Production of programs.</p>	<p>Project progress reports. District and Government statistics.</p> <p>Project progress reports. District surveys.</p> <p>Project progress reports. District statistics. Local perceptions.</p> <p>Local perceptions.</p> <p>Local perceptions.</p>	
	Component 6: Targeted Research and Regional Training			
	<p>6.1.1 Research in indigenous management systems.</p> <p>6.1.2 Research in problems of range rehabilitation.</p> <p>6.1.3 Application of energy-saving devices to arid and semi-arid lands</p> <p>6.1.4 Feasibility studies of improving livestock marketing in the pilot areas.</p> <p>6.1.5 Development of methods to communicate research findings to affected communities.</p>	<p>Number of trained candidates and reportable research results.</p> <p>Number of trained candidates and reportable research results.</p> <p>Number of trained candidates and reportable research results.</p> <p>Number of trained candidates and reportable research results.</p> <p>Number of trained candidates and reportable research results.</p>	<p>Project progress reports.</p> <p>Project progress reports.</p> <p>Project progress reports.</p> <p>Project progress reports.</p> <p>Project progress reports.</p>	

ANNEX III. STAP ROSTER TECHNICAL REVIEW

After a careful review of the proposal and other related materials provided by UNEP, I am convinced that, if successfully implemented, the project is appropriate, scientifically and technically sound, sustainable, and replicable with valuable global environmental benefits. The fact that it is a regional project also provides the opportunity for joint and concerted effort to address a regional problem and exchange experiences. However, the benefits to be drawn from the joint effort have not come out clearly. The regional execution and implementation arrangements also need more clarification. The following is a summary of my opinion on each of the criteria I used in my evaluation of the project.

I. The project in view of the goals, operational strategies and program priorities of GEF and council guidance and the provisions of the relevant conventions.

The proposed project

1. addresses issues of land degradation that are related to biodiversity, climate change and international waters, which are GEF's focal areas of concern. It sets out to establish or strengthen systems of sustainable use of the flora and fauna of the project areas while conserving biodiversity. As a result, the implementation of the project helps achieve global environmental objectives in more than one area.
2. is in agreement with the follow-up actions and recommendations to the STAP workshop on land degradation in that:
 - a) it addresses problems in selected warm arid zones of Africa, with one of the five main biomes covered by Operational Program 1 of GEF;
 - b) it includes the following three activities all of which are called for by the Operational Program 1:
 - soil conservation and restoration of degraded arid areas to conserve biodiversity and a few important endemic plant species;
 - natural resource management emphasising integrated resource use with conservation and development; and
 - energy conservation emphasising conservation of trees and alternative energy sources to conserve the natural vegetation.
3. falls within operational Program 9 since it also addresses the problem of rehabilitation of damaged catchments, adoption of sustainable management practices both of which are priorities of transboundary and ecologically important multiple country dry land, sustainable land-use and conservation systems.
4. falls within GEF's priority area of Operational Program 1 since:
 - It is a pilot project that will demonstrate the conservation and sustainable utilization of the biodiversity of seven sites, in three arid zones of Africa;
 - It addresses the problem of biodiversity loss in the context of pastoralist patterns of land use and conservation related to arid and semi-arid ecosystems management, integrated resource management approach to the preservation and enhancement of biodiversity and management of carbon sequestration and water resources in these arid pastoral lands of Africa;

- Its activities include development and application of basic computerized data processing and management decision support system, GIS, in relation to integrated land, water and biodiversity use in arid areas that are affected by land degradation;
- It also includes activities which addresses technologies which can assist people in developing sustainable use of dry land through fuel wood use efficiency and fuel substitution.

II. Regional context

The project is a regional project involving three African countries (Mali, Botswana and Kenya). The project areas include three important arid zones: the Sudano-Sahel, the Somali-Chalbi, and the Kalahari-Namib. It involves several tribal groups of three African countries that have varied indigenous knowledge on the conservation and wise utilization of biodiversity.

Research and academic institutions of a few African and European countries also collaborate and play an active role in the activities of the project.

III. Global environmental benefits

This pilot project has global environmental benefits in that the;

1. successful outcomes and the experiences and learning gained through the implementation of the pilot project in three African countries and three different arid zones can serve as a model to be adapted and replicated elsewhere in other arid areas of Africa and the rest of the world;
2. successful implementation of the project results in conserving and rehabilitating biodiversity that has global significance;
3. successful implementation of the project, through the resulting increased vegetation cover and reduction of soil erosion contributes positively to international bodies of water such as the Niger River and Lake Turkana, as well as carbondioxide sequestration;
4. the experience and learning's gained from the several tribes of the project area that have varied indigenous knowledge of biodiversity conservation, could be of great global importance in addressing biodiversity conservation issues in other similar arid areas of Africa and the rest of the world.

IV. Scientific and technical soundness

The following are indications of the scientific and technical soundness of the project.

- The project is proposed based on sound consideration of existing scientific information and data on biological and other resources of the project areas;
- It integrates applied land degradation research components aimed at solving major problems in arid lands;
- The testing of natural resource management systems in a number of pilot areas is also an important part of the project;
- As it is presented in the logical framework matrix, the objectives, variable indicators and the means of verification and the critical assumptions and risks make it possible to monitor project activities and evaluate the results.
- The project will be provided with the necessary advice on pertinent technical issues from the Project Advisory Committee which shall be composed of selected experts from the scientific, research and

training community under the chairmanship of a prominent university.

V. Replicability

The successful implementation of the project in areas representing three different arid zones of Africa, with several tribal groups that have varied experience and knowledge in biodiversity conservation, will produce outputs that can be adopted and replicated in other areas of Africa and the rest of the world.

VI. Sustainability

There are three major factors that suggest the sustainability of the project;

1. The stakeholder participation in general and the participatory approach of the project that involves local communities in every activity of the project in particular.
2. The origin to the solution of the problem is indigenous knowledge of the communities and as a result its implementation will not encounter resistance and the project will be sustainable.
3. The firm commitment of the governments involved in the project to address problems of arid and semi-arid zones is a major contributing factor for sustainability. This is demonstrated by the initiatives they have taken so far to address the issues of land degradation and loss of indigenous vegetation and their present commitment and willingness to involve themselves in the project.

VII. Strength

The following are the major strengths of the project:

1. It involves seven sites from three different arid zones of Africa with several tribal groups that have varied indigenous knowledge in the conservation of biodiversity.
2. It involves the concerted effort of three African countries that not only see arid and semi-arid zones as important priority areas of development but have also undertaken initiatives to address the issues of land degradation and loss of indigenous vegetation in these areas.
3. The project makes use of biophysical and socio-economic data on land use that have been made available as a result of research and experimental management from the three arid/semi-arid zones as well as information on indigenous vegetation that is made available as a result of the Integrated Project in Arid Lands (IPAL) in northern Kenya.
4. The project involves stakeholder participation in all activities of the project in general and community participatory approach utilizing indigenous knowledge to ward natural resource management in particular.

VIII. Weaknesses

In my opinion, the major weakness of the project document is the fact that it does not clearly state the benefits to be drawn from the regional effort (which is one of the strong points of the project) by each of the participating countries. The implementation and execution management arrangement at the regional level does not also clearly state the role of the Regional Coordination Unit or Office. The following are the major points that need to be reexamined.

1. Links between the project activities in the three countries involved and the RCU.

2. The nature of collaboration between UNOPS and the concerned local ministries in project execution. The role of the various ministries and the UNOPS are not clearly stated.
3. Duties and responsibilities the national steering committee (even though the members are not listed) are not clear. In addition to the NSC, there is also the Regional Steering Committee. It is not clear as to how policy guidelines and supervision of national projects can be performed by a regional body. Is this an agreement ministers can make?
4. At the community level, there are project staff, community based organizations, extension staff, project manager etc; the roles of each and their links are not also clear.

May 8, 1998

IA response:

The concerns expressed by the STAP roster reviewer have been addressed in the revision of the document in the following way:

1. The framework for the links between the project activities and the RCU has been specified in the Implementation Arrangements section. The details will be addressed and worked out during the appraisal phase.
2. UNOPS is not the executing agency. An agreement between UNEP and UNDP on the modalities for joint implementation of projects in Land Degradation is on the way, and the detailed implementation/execution arrangements will be finalised during the appraisal phase.
3. The regional bodies (Regional Coordination Unit and Regional Policy Steering Committee) will be responsible for the day-to-day management of the regional activities and provide the national project units with advice and overall guidance. The inclusion of Ministers in the regional bodies will ensure the maximum coherence between national and regional activities.
4. The project staff at community level will execute the physical components of the project (e.g. construction works, nurseries, crust breaking etc) and the training, supported by the community organisations and extension staff. The detailed arrangements will be worked out in the appraisal phase.
5. In general, the benefits to be drawn from the regional efforts have been more clearly spelled out, emphasising the regional learning aspects and particularly drawing attention to the fact that the root causes of land degradation in arid zones are very similar in the three countries, which offers a unique opportunity to develop widely replicable models for rehabilitating degraded rangelands.

(Second review after revision of document):

Thank you for sending me the revised version of the project document on "Management of Indigenous Vegetation for Rehabilitation of Degraded land in the Arid Zone of Africa", project number GF/1300-97-04.

Please be informed that I am satisfied with the changes made and as I have stated in my technical review, the project is technically sound, sustainable and replicable with valuable global environmental benefits.

August 16, 1998.

ANNEX IV.

ROOT CAUSES

Table 2.1. Intermediate, proximate and ultimate causes of biodiversity loss and land degradation.

	Botswana	Kenya	Mali
Intermediate	<ul style="list-style-type: none"> • overgrazing • wildlife poaching • drying up of Okavango delta • wildfires • deforestation • soil and vegetation degradation • overharvesting of medicinal plants and natural products • reduction of underground aquifers 	<ul style="list-style-type: none"> • overgrazing • soil degradation • deforestation for charcoal and fuelwood 	<ul style="list-style-type: none"> • changing forms of shifting agriculture • reduction of fallow periods • overgrazing • late wildfires • deforestation • transhumance patterns shifting southwards leading to conflicts
Proximate	<ul style="list-style-type: none"> • range compression • land tenure conflicts • high fuelwood demand • water development • livestock production policies 	<ul style="list-style-type: none"> • sedentarisation • high fuelwood demand • land tenure conflicts • marketing policies • inadequate dryland policies 	<ul style="list-style-type: none"> • high fuelwood demand • land tenure insecurity • unbalanced policies • inadequate human and financial resources
Ultimate	<ul style="list-style-type: none"> • poverty • drought • population growth 	<ul style="list-style-type: none"> • poverty • droughts • population growth 	<ul style="list-style-type: none"> • poverty • drought • population growth

Table 2.2: Threats and root causes.

Threats	Root causes	Specific components and outputs
High grazing pressure around settlements	Range compression and loss of dry season pastures	Component 1 (Outputs 1.1, 1.2 and 1.3) Component 4 (Output 4.2) Component 5 Component 6
Uncontrolled over-exploitation of natural resources	Breakdown/loss of traditional management systems and inadequate land tenure policies	Component 1 (Outputs 1.1, 1.2 and 1.3) Component 5 Component 6
High grazing pressure around settlements	Reduced mobility of pastoralists and lack of adequate water points	Component 1 (Output 1.1) Component 3 (Output 3.3) Component 5 Component 6
Deforestation for fuel wood	Shortage of energy supplies, and wood for construction	Component 3 (Output 3.1) Component 5 (Output 5.1) Component 6
Uncontrolled wildfires	Lack of effective management controls at local level	Component 3 (Output 3.2) Component 6
Continuing degradation of vegetation and soils	Lack of appropriate vegetation and soil rehabilitation technologies for large scale rehabilitation	Component 3 (Output 3.1) Component 1 (Output 1.1) Component 5 (Outputs 5.1 and 5.2) Component 6 (Output 6.1)
Over-exploitation of natural resources	Lack of economic incentives for conservation and inadequate marketing policies	Component 4 (Outputs 4.1, 4.2 and 4.3) Component 5 Component 6
Inappropriate and destructive sustainable use models	Lack of integration of scientific and indigenous knowledge and unavailability of and lack of access to relevant data	Component 2 (Outputs 2.1, 2.2) Component 5 (Outputs 5.1, 5.2) Component 6 (Output 6.1)

ANNEX V:

PUBLIC INVOLVEMENT PLAN SUMMARY

Stakeholder Participation (Matrix and Analysis)

1. In the participating countries, a wide variety of stakeholders have an interest in natural resources use including the sustainable utilization of indigenous vegetation, biological resources, water resources, and the global environmental impacts of rangeland use, including climate impacts. These stakeholders include farmers, made up of pastoralists and agrosilvo-pastoralists who practice subsistence agriculture; sedentary livestock owners and transhumance pastoralists; community-based organisations and non-governmental organisations (NGOs), and government technical administration at both the central, district and community level. Global interests in biological diversity and climate change are held by international organisations, including the United Nations.
2. The project is based upon a participatory approach to improve indigenous vegetation management, involving the active participation of different stakeholders in all aspects of project design implementation, monitoring and evaluation. A matrix summarising the degree of interest and potential involvement of different stakeholder groups are show in Table 3.1.
3. Various stakeholders will be involved in the project implementation activities as presented in the main project document and the logical framework. Essentially project implementation will be carried out by local communities, their organisations and NGOs, with the support of government technicians and research and training institutions. A participatory monitoring and evaluation system will be put in place, to ensure that the local communities and NGOs are involved in self-monitoring and evaluation.

Project Preparation

4. Consultations were held with the three participating governments and GEF-OFPs to determine the broad scope of the project and modalities for co-operation between the three countries. To support this process, co-ordination meetings among various stakeholder groups were held at the regional level between the three participating countries and the University of Oslo; at the national level and at the regional and project site level. National and international consultants as well as a team from the University of Oslo assisted with the project preparation. The project preparation process included:
 - Four Technical Co-ordination meetings between the participating countries and the University of Oslo, including site visits;
 - Community consultations and site visits;
 - Stakeholder workshops;
 - Preparation of a draft project document, based on inputs from the national reports;
 - Review of the draft project document by stakeholder in the project sites and incorporation of their views and comments;
 - Review of the project document by an independent team of international consultants;
 - Joint UNEP/UNDP review and finalization of the project documents.
5. An integral part of the project preparation was the convening of a number of Technical Co-ordination Meetings. A meeting was convened in each of the participating countries and involved visits to the project sites as well as consultations with a wide cross section of stakeholders, including local community leaders, government officials, NGOs and regional and international organisations. One of the technical meetings was convened by the University of Oslo to facilitate the preparation of the

draft project document based upon national inputs. The OFPs of the participating countries as well as their national consultants participated in all the Technical Co-ordination Meetings.

6. In Botswana, the project was prepared under the auspices of the Range Ecology Unit of the Ministry of Agriculture, with the support from the GEF/OFP. Steps in the process, which commenced in September 1997, included (1) selection of potential sites the basis of PRA results analysis and discussions held with technical services; (2) co-ordination of a Technical Co-ordination Meeting which included site visits and consultations; (3) site visits, information and awareness-raising meetings conducted with stakeholders to get their ideas, priorities, and constraints for project formulation and implementation; (4) preparation of a draft country proposal; (5) convening of stakeholder workshops, with representatives of the local communities, decision makers and technicians to validate the project document; and (6) participation in the Review Meeting and finalisation of the project document.
7. In Kenya, the process began with joint site visits by the national consultant and the National Environment Secretariat (NES) of the Ministry of Environmental Conservation technical staff. Consultations were held with a wide cross-section of stakeholders including government stakeholder Ministries and departments and local NGOs. Consultations took place at the site level and involved village elders/leaders, representatives of village committees and villages, including women and youth. They provided detailed information on land degradation and its impact on their livelihoods, as well as specific information on physical factors (water, rainfall, soils) biological factors (plants, animal destocking etc.) and socio-economic factors (infrastructure, marketing, transport security) impacting upon their ability to manage the range and in particular indigenous vegetation. In Marsabit the community consultations were carried out in collaboration with GTZ/Marsabit Development Programme and utilize the existing extensive community structure of environmental committees.
8. The Kenya project document was prepared under the supervision of the GEF focal point and consolidated with inputs from government and NGO technicians. It was also reviewed by the Government of Kenyas Biodiversity and Desertification Committees. Like in Botswana and Mali, a Technical Co-ordination Meeting was convened in Kenya, as well as site-visits, information and awareness meeting and stakeholder workshops in order to validate the project document. A country document was prepared.
9. In Mali, the project was prepared under the guidance of the Ministry of Environment with support from the GEF/OFP and a wide-cross section of community based organisations undertaking activities in the demonstration sites. The steps in the process were similar to those undertaken in Botswana and included: (1) selection of the potential sites on the basis of PRA results analysis and discussion with local NGOs and technical services; (2) co-ordination of a Technical Co-ordination Meeting including site visits and consultations; (3) site visits, information and awareness-raising meetings; (4) preparation of a draft country project proposal; (5) convening of stakeholder workshops; and (6) participation in the project review process.
10. Initial consultations were also held with research institutions and universities in the participating countries with respect to their participation in the project, particularly with respect to component 6. The University of Oslo in collaboration with the OFPs of the participating countries will build upon these consultations by establishing formal links with these institutions as part of project implementation.
11. To elaborate elements of the project and to review it for its scientific and technical soundness as well as cost effectiveness, a review meeting was convened by the University of Oslo in collaboration with the OFPs of the participating countries. The review meeting was attended by a small team of

international experts, as well as the OFPs of the participating countries. In addition, a joint UNEP/UNDP review of the project was undertaken in August 1998 to facilitate the joint implementation of the project. In addition to UNEP and UNDP, the OFP from the participating countries and the University of Oslo participated in the review session.

Stakeholder profile

12. Diverse stakeholders have been identified in the project demonstration sites. Their differing roles and use of natural resources have a variety of impacts on natural resource management, loss of biological diversity including indigenous vegetation, land degradation and possibilities for land rehabilitation and biodiversity conservation.
13. Among the rural populations in the participating countries, two important resource groups can be distinguished – pastoralists and agro-pastoralists (farmers). These people were originally nomads (transhumants), but in recent years many have become sedentarized. They practice subsistence agriculture on small scale. In all of the participating countries the men's livestock consists of cattle but include sheep and goats, which are often the responsibility of women. The pastoralists face the following major constraints: pasture resource depletion, due to overgrazing, loss of indigenous vegetation and decreasing access to watering points, as ponds have dried up due to the drought and the existing boreholes are inadequate, with frequent maintenance problems. Where such boreholes do exist, animal and human populations tend to be concentrated, resulting in severe loss of biological diversity including indigenous vegetation and land and resource degradation. In many areas, wildlife populations have declined. Where natural ponds are used, the water quality is deteriorated due to animal use, resulting in poor quality of water for human consumption. The pastoralists also experience degradation of rangeland due to decreased mobility of livestock, the lack of adequate marketing opportunities for stock off-take; and the breakdown/loss of traditional management systems and issues relating to land tenure.
14. In contrast to the pastoralists, the farmers combine crop production with livestock husbandry. Their land use is localised and resource use is intense around the farms. They use crop residues as livestock feed and benefit from fertilising the farms by livestock manure. The restricted mobility and high human density has forced the farmers to practise intensive land use strategies, as opposed to pastoralists. Given that the resources and the land used by the farmers were formerly part of the grazing resources by the long distance transhumant pastoralists, conflicts over resource access are currently on the increase. Loss of the key grazing resources to the farmers is sparking off confrontation between the two production systems. Furthermore, the traditional regulative processes of utilizing crop residues by the livestock of the pastoralists and the mutual use of the resource have broken down. This has accelerated land degradation and loss of biodiversity. Reversing land degradation and conserving biodiversity requires reduced land use conflicts. The different categories of stakeholders will participate in establishing amicable mechanisms of resource use and promoting conservation of biodiversity. The communities are interested in rational use of the land for grazing and farming.
15. From an institutional and organisational point of view, diverse community-based groups and associations, such as co-operatives, women's groups, youth groups, and herders' associations, have interests in ensuring more sustainable use and management of natural resources. Many NGOs work closely with these community-based organisations (CBOs). The NGOs have considerable experience in various domains related to natural resource management, awareness-raising and extension, training, participatory rural appraisal and planning, and monitoring and evaluation, which will be very useful for the project.

Stakeholders and the Decision-Making Process

16. The local communities and the NGOs will be involved in the decision-making processes of the project at various levels. The project will have representatives of these stakeholders on the Regional Project Steering Committee (RPSC) (one community representative from each of the participating countries). The RPSC will be responsible for providing overall policy guidance for the implementation of project activities in all the project sites. Community representatives and NGOs will also play important roles in the National Advisory Group, which will be established in each of the participating countries. This mechanism will review and advice on implementation procedures and strategies and project progress.
17. Project implementation on the ground will be the mandate of the project staff, the rural population and NGOs with support from government officials. The rural communities and NGOs will be further involved in a self-monitoring and evaluation exercise in order to contribute to overall project decision making. Guidelines will be drawn for contracting NGOs, and local Research and Training Institutions in order to provide support to rural Communities. Local interests will be further reinforced by the participation of elected members of National Assemblies and elected local leaders.
18. At the community level stakeholder participation and the decision-making process will build on existing indigenous structures. This will necessitate the strengthening of community based representative committees and Community Environment Management Committees where they exist. These mechanisms will take full responsibility for managing the implementation of specific elements of the project (i.e rehabilitating degraded areas of indigenous vegetation). A participatory approach, utilizing indigenous knowledge and geared towards improved natural resource management will be the main means for achieving biodiversity conservation and halting land degradation. There will be active participation of different stakeholders in all aspects of the project appraisal, implementation, monitoring and evaluation

Social Issues and Impact on Beneficiaries

19. The project will have a positive impact on different categories of beneficiaries, such as through the strengthening of indigenous management systems and structures, upgrading of their technical and management capacities, improvement of the natural resource management systems, generation of alternative livelihood options, and improvement of livestock production and marketing. The project will also facilitate the exchange and assimilation of resource management techniques between different regions of Africa.
20. Project implementation will, however, need to be cognate of potential conflicts between different resource users, such as sedentary farmers vs. transhumant herders, or the displacement of resource users through agreements to protect certain sites through an exclusion of use. The project is designed in such a way to overcome such potential conflict through negotiation mechanisms and the development of partnership conventions between the communities, user groups and/or governments.
21. Direct beneficiaries of the project will include the rural population – women, men and youth living in the project areas. Particular emphasis will be placed on the role of women as “agricultural keepers” – maintaining subsistence and/or commercial fields More specifically, it is estimated that the project will directly impact on over 180 000 persons in the project demonstration sites. In Mali, the total population affected directly is 100,000 people, 50% of which are transhumants. In Kenya, a total of 60,000 people, of which 50% are transhumants, are affected, and in Botswana the total population directly targeted is 20,000, none of which are transhumants. The project will work with these communities with the view of strengthening indigenous management systems, and developing land

use/resource-management activities. The local stakeholders living in these communities will benefit from increased control over their natural resources as well as training, technology transfer, and development of skills. Opportunities will also be provided for the local stakeholders to benefit from techniques and methodologies being employed in various other parts of Africa, which can be applied in their own local situations. These activities will lead to improved rangeland and indigenous vegetation management, building of local organisational capacities and biodiversity conservation. In addition, long-term benefits will accrue to stakeholders in other parts of the arid/semi-arid zones of Africa once the project results are replicated.

22. Secondary groups of beneficiaries can be identified beyond the target communities. Other rural communities in the adjacent areas will also benefit, as the project plans to diffuse information and lessons learnt on a broader scale, through the mass media involving the use of photography, newsletters, videos, television, radio and the use of demonstration sites and various types of competitions. The technical staff of relevant government agencies, NGOs, and other development partners in the project areas, will benefit from training, equipment and logistical support, so that they can better assist the populations and facilitate natural resource management efforts. The three governments will benefit from increased collaboration, sharing of information, experiences and technology transfer. In addition, long-term benefits will accrue to stakeholders in other parts of the arid/semi-arid zones of Africa once the project results are replicated. The technical staff of relevant government agencies, NGOs and other development partners in the project areas, will benefit from training, equipment and logistical support, so that they can better assist the populations and facilitate natural resource management efforts. The three governments will benefit from increased collaboration, sharing of information, experiences and technology transfer.
23. In addition, in the research institutes and universities, such as the universities of Moi and Nairobi in Kenya, Egerton, University of Botswana, University of Oslo, Agriculture University of Norway and Higher education institutions in Mali will benefit from enhanced collaboration in scientific work. This enhanced collaboration between these institutions will also create a number of opportunities for students in the participating countries to benefit from student exchanges and training at various levels through the University of Oslo. The collaboration between these institutions will also facilitate collaborative research with direct community involvement and will therefore provide a strong basis for integrating modern scientific approaches with traditional ones.

Table 3.1: Stakeholder involvement in different phases of the project.

PROJECT INVOLVEMENT	Local Population							Admin	NGOs	Comm. Groups	Co-ops/ EIG	Projects	T S
	F	SP	T	W	Y	FU	CL						
Preparation	+	+	+	+	+	+	++	+	++	+++	+	+	+
Implementation (by component)													
1. Establishment of Appropriate Indigenous Management Systems and In-Situ Biodiversity Conservation	+	+	+	+	+	+	+++		++	+++	++		+
2. Establishment of Arid Zone Database and GIS	+	+	+	+	+	+	+	++	+	++			+
3. Rehabilitation of Indigenous Vegetation	+	+	+	+	+	+	+		+++	++++	+++		+
4. Improved Livestock Production and Marketing, and Provision of Alternative Livelihoods	+	+	+	+	+	+	+		++	+++	+++		+
5. Technology Transfer and Training	+	+	+	+	+	+	++	++	+++	+++	++		+
6. Targeted Research	+	+	+	+	+	+	+	++	++	+++	++	+	+
Evaluation	+	+	+	+	+	+	+	+++	++	++	++		+

Legend: F=Farmers, SP=Sedentary Pastoralists, T= Transhumants, FU=Forest Users, CL= Community Users, W=Women, Y=Y
EIG=Economic Interest Groups.

Note: The number of + indicates the intensity of intervention by each stakeholder group.

ANNEX V.

TARGETED RESEARCH OVERVIEW
(examples of topics that might be worked on)

Components	Targeted Research Outputs	Targeted Research Activities
1. Establishment of appropriate indigenous management systems, and in-situ biodiversity conservation.	<p>Management of indigenous vegetation strengthened and community capacity building achieved.</p> <p>Capacity for self reliance and project evaluation developed at the community level.</p>	<ul style="list-style-type: none"> • Develop participatory planning methods. • Develop community participatory action plans. • Develop community biodiversity registers. • Develop community herbaria. • Develop community assessment methods.
2. Establishment of arid/semi-arid zone biodatabase and GIS.	<p>Information made available for different stakeholder participants and for comparative regional replications.</p> <p>Community capacity for decision making strengthened and technological transfers achieved.</p>	<ul style="list-style-type: none"> • Establish database on natural resource management. • Develop capacity within country on transfer of GIS technology. • Evaluate use of GIS for Technological transfer to the local communities. • Co-ordinate analysis and write up of raw data existing in local archives/ synthesize information for management of natural resources.
3. Rehabilitation of indigenous vegetation	<p>Rehabilitation of degraded indigenous vegetation achieved.</p> <p>Community participation increased.</p> <p>Scientific and indigenous knowledge systems integrated to improve management of indigenous vegetation.</p> <p>Soil loss reduced and mobile dunes fixed.</p> <p>Threats of wildfires reduced.</p>	<ul style="list-style-type: none"> • Demonstrate management of degraded indigenous vegetation using: <ul style="list-style-type: none"> • natural regeneration; • re-seeding; • water harvesting techniques for tree planting; • development of soil stabilisation methods. • Conduct monitoring. • Establish fire management techniques.
4. Improvement of livestock production and marketing, and provision of alternative livelihoods.	<p>Participation in alternative livelihood technologies increased.</p> <p>Information on marketing made accessible to the communities.</p> <p>Development of livestock marketing policies facilitated.</p> <p>Economics of fodder grown by irrigation demonstrated.</p> <p>Improved wild cereal breeds selected.</p>	<ul style="list-style-type: none"> • Demonstrate alternative livelihoods for agro-pastoralists. • Provide information on marketing of goods and services from demonstration sites. • Develop livestock and range products marketing policy. • Demonstrate growing of fodder by irrigation on trial basis. • Select suitable forage plants and wild cereals for improved breeding.

<p>5. Technology transfer, training and comparative learning</p>	<p>Establishment of information exchange systems.</p> <p>Comparative information promotes replication of the project results elsewhere in the arid zones of Africa.</p> <p>Communities provided with new skills, which increases the sustainability of the project.</p> <p>Learning exchanged by community participants.</p> <p>Information on regional project improved.</p> <p>Local scientists provided with opportunities to compare experiences with other scientists elsewhere.</p> <p>Manpower development achieved and continuity of the project guaranteed.</p>	<ul style="list-style-type: none"> • Sharing of experiences between demonstration sites on outcomes of management practices. • Synthesis of information for purposes of regional comparisons. • Provide community stakeholders with skills regarding improved management of natural resources. • Conduct workshops, study visits, talks and participatory demonstrations. • Conduct annual scientific seminars. • Facilitate visits to local and international Universities by researchers from the countries. • Organise training at M.Sc. and PhD levels through the University of Oslo.
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