

DRAFT GEF/PDF BLOCK B**REQUEST**

Country: Botswana, Kenya, Mali

Project Title: Management of Indigenous Vegetation for the Rehabilitation of Degraded Rangelands in the Arid Zone of Africa.

GEF Focal Areas: Biodiversity / Land degradation

Estimated Project Cost: 10 Mi. US\$
Governments of Botswana, Kenya and Mali 1 Mi.
Co-financing 2 Mi.
GEF 7 Mi.

Period: 5 years

Implementing Agency: UNEP/UNDP¹

Executing Agency: Governments of Botswana, Kenya and Mali

PDF: Block B 330,000 US\$

Background

- 1 Indigenous vegetation on rangelands - trees, shrubs and grass - is the primary resource of the pastoral economy in arid and semi-arid regions of Africa. How indigenous vegetation is managed is vital for the survival of people in the arid and semi-arid zone. Loss of natural vegetation through human pressure for grazing, building and fuelwood, and the widespread effects of drought have resulted in land degradation leading to untold human suffering and erosion of unique and endemic biodiversity on which the ecological stability of these ecosystems depends.
2. A key factor for sustainable development of arid and semi-arid regions is the ability to maintain their biodiversity. The diversity within species of living organisms, between species and of ecosystems form important elements in implementing strategies for development. When drylands plant species or a dryland animal species, or soil microorganisms adapted to dry conditions are lost, it is clear that the major stabilizing force in the ecosystem has been lost. And because species and genes well adapted to the drier areas are so few, the loss is great.² One of the greatest values of biodiversity in dryland environments is the ability it confers on

¹ The UNEP/UNDP Partnership to Combat Desertification, signed by the Executive Director of UNEP and the Administrator of UNDP in April 1995 (see attachment) will form the basis of UNEP-UNDP collaboration in land degradation projects, as they relate to the other GEF focal areas

² United Nations 1994, Biological Diversity in the Drylands of the World, International Panel of Experts Subgroup on Biodiversity (IPED)

ecosystems to respond to and maintain their functioning after contingent events and under unforeseen environmental conditions. A reduction in biodiversity in arid and semi-arid ecosystems would reduce or remove this valuable function. Considerable evidence exists in the regions being targeted by this project of dryland ecosystem deterioration, particularly the loss of indigenous species.

3. Several studies have shown that the deterioration of dryland ecosystems has gradually brought about a reduction of their biological productivity. Such deterioration is the result of inappropriate use of natural resources by the population and exacerbated by drought. In turn, drought has often encouraged the inhabitants to adopt practices which have a negative effect on natural resources and by extension biological resources.
4. The GEF/STAP Expert Meeting on Land Degradation, 18 - 20 September 1996 in Dakar (Senegal) also stressed the important role of indigenous species in the control of land/vegetation degradation. Revegetation with indigenous species will not only result in global biodiversity benefits but also contribute to the reduction of CO₂ emissions bearing in mind that a small recycling of bio-mass in arid and semi-arid soil and improvement in their water retention capacity can contribute as a sink to a significant portion of CO₂.
5. A fundamental principle of woodland management in the arid zone is determined by the low and extremely variable rainfall which results in a very low success rate in tree planting. The combination of favourable growth of seedling and sapling trees in the arid zone occurs only every twenty to thirty years, which tends to make tree planting, especially with exotic species, impractical except on a very small scale in the immediate vicinity of localised water where the small trees can be irrigated. Under natural conditions, stands of indigenous trees and shrubs become established in favourable years and may have the opportunity to grow to maturity only in the rare circumstances when climate and other environmental factors prove to be favourable. In addition to the constraints imposed by the climate, the success of a natural stand of indigenous trees or shrubs depends upon the degree of exploitation by human and livestock populations. With the increasing pressure on vegetation caused by growing populations of people and animals, woodland and shrubland communities are commonly prevented from achieving maturity, and may be held in stunted condition and eventually killed by excessive browsing and cutting.
6. Ten years of research on indigenous vegetation ecology carried out by the UNEP/UNESCO Integrated Project in Arid Lands (IPAL) in Northern Kenya, together with an enquiry into the prospects for arid zone forestry, have brought to light the nature of woodland degradation (as one aspect of desertification) and its main causes, provided some guiding principles for indigenous vegetation management, and serve as an effective tool for monitoring. These have been described in the IPAL Resource Management Guidelines for Northern Kenya (IPAL Technical Report A-6, Part II). In addition, the UNEP/IGN study carried out in Mali, which used remote sensing techniques (time series interpretation of aerial photographs and SPOT imagery) to investigate the evolution of ecosystems in the Sahara/Sudan region, will provide a sound basis for this project.
7. Against this background of degrading indigenous woodlands and shrublands, the IPAL programme investigated and recommended practical methods to rehabilitate and manage vegetation on large areas of degraded rangeland. It became clear that tree planting, whether with indigenous or exotic trees, could not make more than a very slight impression upon the general widespread problem of tree destruction (although it is feasible and desirable in villages where individual plants can be watered and protected). The results of protecting existing

indigenous tree seedlings across the rangelands as a whole, but also within the villages, are probably hundreds of times more productive in re-afforestation in the arid zone than attempts to plant trees. A further advantage that was found in the use of indigenous trees as compared with even the most drought-adapted exotic species was that when both were planted experimentally in the same area, the exotic species (e.g. *Prosopis chilensis*, *P. juliflora* and *Parkinsonia aculeata*) did not survive drought years, whereas indigenous species, notably *Acacia tortilis*, *A. senegal*, did survive.

Justification

8. Research, survey and experimental management undertaken in Botswana, Kenya and Mali have provided a wealth of data and explicit management guidelines on most aspects of land-use and economy in the region, including range and woodland management, upon which to establish a programme of natural resource management.
9. Although this project is to be undertaken in the arid zones of Botswana, Kenya and Mali, there is no doubt that the experience to be gained, and the practical application of that experience in management activities, particularly indigenous vegetation management, would make a valuable contribution to the control of desertification and conservation and sustainable use of biodiversity throughout the arid zone of the world.
10. Serious interest has been expressed by several donor agencies in supporting certain components of the IPAL Resource Management Guidelines developed in Northern Kenya. The European Union is presently supporting the maintenance of research activities at the Kenya Center for Arid Zone Studies in Marsabit, while the World Bank is utilizing some of the recommendations for small-scale community income generating activities in its Kenya Arid Lands Management project. The support being sought from the GEF will facilitate demonstration of the full range of the resource management guidelines in order to conserve biodiversity, while using them for demonstration and training for arid zone resource managers across Africa and other arid zones of the world. It will facilitate networking of scientists, planners and managers working on similar problems across the arid zones.
11. The IPAL Resource Management Guidelines have been thoroughly examined by Review Missions and International orientation seminars, and recommended for full implementation when funding is made available.
12. The Turkana Resources Evaluation and Monitoring Unit, established by the government in Lodwar in collaboration with UNESCO, the German Government and Norway, provides an excellent base for the implementation of the demonstration and training activities in the region and continuing advice on all aspects of resource management. Similar facilities also exist in Botswana and Mali.
13. A body of technical field assistants has been trained by the IPAL project from among the pastoralists of Northern Kenya, and some of these men and women are available to participate in this project. Moreover, two local Kenyan scientists, who worked in the IPAL project and are graduating from Oslo and Wageningen Universities with pertinent ecological management PhDs done on data from the project will also be available to participate in this project's activities.
14. The current decentralization process (e.g. changes in land tenure systems) being undertaken by the Government of Mali to make individuals more responsible for land management will

provide an enabling environment for this project. In addition, significant sections of Mali have already been covered by the UNEP/IGN study, utilizing remote sensing techniques to evaluate land degradation trends as a basis for planning alternative management strategies. The demonstration sites to be selected will fall within the ecological zones covered by the UNEP/IGN study.

Objectives

15. The main long term objectives are to conserve biodiversity by developing an appropriate system of land use which will reverse the present trend of degradation and establish sustained production within the livestock economy of the arid zones at a level which is sufficient to provide for the needs of the growing pastoral population, which is becoming increasingly sedentarised.
16. The project aims to operationalize the management guidelines prepared by IPAL by carrying out a carefully co-ordinated demonstration programme of development and sustainable use of land, water and vegetation resources, of animal husbandry, of regulated livestock distribution and stocking levels, and of improved marketing. The demonstrations will be organized in a number of sites in three Sudano-Sahelian and / or Kalahari-Namib countries: Botswana, Kenya and Mali. The demonstration sites will also be used for training activities through seminars, workshops and field orientation for planners, policy-makers and resource managers and users.
17. The implementation of the management guidelines will require considerable flexibility in order to accommodate several inevitable variables in the ecological and socio-economic circumstances characteristic of the arid zone. In particular, the over-riding effects of the highly variable rainfall and the resulting variations in plant and animal productivity, with successive drought periods, must be taken into account in long term planning, both from the standpoint of ensuring the continuing supply of essential resources for the people, and from that of preventing the environmental degradation and loss of biodiversity which is prevalent during periods of drought.
18. The breadth of disciplines involved in such an integrated management programme will call for the co-operation of several specialised agencies and institutions. The supervision and specialised monitoring and evaluation for the programme as a whole and for the indigenous vegetation management component in particular will be provided by a consortia of institutions from the participating countries, including the Range Ecology Unit of the Botswana Ministry of Agriculture, Botswana NCS Coordinating Agency, the University of Botswana, the Botswana Ministry of Rural Development and Environment, the Kenya Arid Zone Research Centre, the Mali Council for the Environment, and the Regional Directorates for Agriculture and Livestock Development of Mali.

Summarized Description of the Project

19. The project will operate in pastoral communities in semi-arid ecosystems in Botswana, Kenya and Mali: Gomare, Rakops and Lephephe (Botswana); Turkana District (Kenya); and, Gao, Mopti and Tomboctou (Mali). The areas selected will provide a representative sample of the arid and semi-arid zones in eastern, southern and western Africa respectively and provide a sound basis for the testing of different management approaches to conservation and sustainable use of biodiversity through the conservation and rehabilitation of indigenous vegetation.

20. The project comprises a programme of closely integrated management activities in which the research results obtained by IPAL will be applied through the implementation of the IPAL Resource Management Guidelines in the tribal grazing lands of the pastoralist and agropastoralist people in the three countries. In the course of implementing the initial stages of the resource management guidelines, operational activities involving practical range, woodland and livestock management will be carried out co-operatively with the Governments of Botswana, Kenya, and Mali and will be managed as a pre-extension programmes of the departments responsible for pastoral land management and form the basis for training activities across arid zones of Africa and indeed the world. The establishment of an Arid Zone BioDatabase and GIS will capitalise on, and recover, the considerable investment in collecting relevant data since 1976, which is currently trapped as raw data and unavailable to the international community at large. These data are highly relevant to the management of arid zones and will contribute significantly to the integrated management of land, water, and biodiversity in the sites.
21. The project will also focus on the rehabilitation of indigenous vegetation in the demonstration areas, based upon proven vegetation management approaches, including pastoral management. In addition, regional workshops will be organized by the participating countries to facilitate technology transfer, to other countries with similar ecosystems, in the management of indigenous vegetation for the conservation and sustainable use of biodiversity in arid and semi-arid zones.
22. The initial main emphasis of the project will be the implementation of the pilot indigenous vegetation management techniques (to be integrated with livestock management). A regional comparative approach will be taken by examining the practices of neighbouring tribal communities living in the same arid ecosystem. Project activities will involve the organization of the rotational use of rangelands and woodlands, based upon previously defined eco-climatic zones, recent and current rainfall patterns, water supplies, estimated current carrying capacities (dependent upon recent rainfall) linked to recent land use. Monitoring of the effects of management using the GIS system will form an integral part of the project. In addition, an analysis will be undertaken in the various demonstration areas to determine the economic consequences of continued degradation.
23. The operation of the project will be undertaken by local professional staff and locally trained field assistants who will, in due course, accept responsibility for the project's management activities. They will be assisted by a team of international specialists. Depending upon the degree of success during the initial phase, further international long-term financing will be sought. The project will seek to equip local stakeholders, particularly local pastoral communities in the three participating countries with the necessary tools, methods and knowledge to manage indigenous vegetation using a combination of both traditional and modern approaches.

Eligibility

24. Botswana, Kenya and Mali are parties to the Biodiversity Convention and have signed the Desertification Convention. This project fits in with the priorities of the COP of the CBD on the sustainable use and conservation of arid and semi-arid land ecosystems. It is also in conformity with the GEF Operational Strategy and Operational Program on arid and semi-arid lands, as well as the "Framework for GEF Activities Concerning Land Degradation" (October 1996). Revegetation of the arid zone is important for its influence on climate change and maintenance of underground aquifers and water tables under the International Waters

Operational Programs. Implications for the supply of fuelwood energy in the arid zone are also important.

National Level Support

25. The project has been endorsed by the participating countries. The Range Ecology Unit of Ministry of Agriculture of Botswana coordinates at national level the Kalahari-Namib Action Plan, which is an integral part of the SADC Strategy for Sustainable Development. The Range Ecology Unit will integrate this project with the other ongoing natural resource management activities, especially the 'Rangeland Inventory and Monitoring' projects and coordinate its implementation with the Agency for the National Conservation Strategy.
26. The Kenya Arid Zone Research Centre will form the base for this project in Kenya. It is anticipated that the Government of Kenya will eventually assume full responsibility for the operation of all components of the integrated management operation, including the Indigenous Vegetation Management component, within five to ten years. Starting with the Turkana tribal grazing lands, it is expected that the scope will expand progressively to cover management of the range and livestock resources of adjacent districts and eventually the whole arid zone of Kenya. Depending upon the success of the initial pilot demonstration management phase, further international assistance will be sought for the long term support of the expanded programme.
27. In Mali, the Ministry of Rural Development and Environment will provide the overall guidance for the project implementation and seek support of the regional agricultural and livestock development authorities in Gao, Mopti and Tomboctou for a coordinated demonstration programme. The Government of Mali, through the National Council of the Environment of the Ministry of Rural Development and Environment will use the results of the project as the basis for developing a comprehensive national long-term rehabilitation programme for degraded lands. Activities would be consistent with other initiatives such as the Natural Resources Management Project (World Bank), NEAP, and the Environment Database System Project.

Other Related Activities

28. The project should not be considered as an isolated initiative concerned with one aspect of man's interactions with arid zone ecosystems in the three countries, but through its association with other institutions, should be clearly viewed within the broader perspective of activities for improving the productivity of arid lands and the rehabilitation of degraded areas in these zones. The project will continue to increase its links with various studies and management activities that are being undertaken or planned by other international and regional organizations, e.g., UNDP/UNSO, FAO, UNESCO and IGAD, CILSS, SADC and/or bilateral agencies. Steps will also be taken to ensure close co-ordination with other relevant projects. Working relations will also be maintained with research institutes and universities, such as those of Moi, Oslo and Kent, whose scientists have been associated with IPAL in the past. Links are also established with relevant and GEF-related programmes presently undertaken by consortia of national and international organizations such as "Desert Margins Initiative" (DMI), with ICRISAT as the lead agency; People, Land Management and Environmental Change (PLEC), with UNU as the lead agency; Slash and Burn (ASB) with UNDP as the lead agency. The project will complement the World Bank Kenya Arid Lands Management project, which is utilizing some of the recommendations of the IPAL Resource Management Guidelines (it should however be noted that whereas the Bank Kenya Arid Lands

Management project emphasizes income generating activities, this project emphasises broader natural resources management, especially of indigenous vegetation.

Justification for a PDF Grant

29. The Integrated Project in Arid Lands (IPAL) was established jointly by UNEP and UNESCO in 1976 with the aim of finding direct solutions to the most urgent environmental problems associated with desertification and the ecological degradation of arid lands. It is an example of the type of pilot activity that UNEP and UNESCO, together with other organizations and a number of governments, were promoting to provide the scientific basis for the rehabilitation and rational development of arid and semi-arid zone ecosystems through integrated programs of research (including surveys, observation and experimentation), training and demonstration.
30. During the operation of the program, many investigations were undertaken on several aspects of the ecology and experimental management, centered upon the interaction of pastoralists and their livestock and soils and vegetation of the arid zone environment. This culminated in the publication of resource management guidelines for the arid zone and the establishment of the Kenya Arid Zone Research Centre.
31. Although the project was undertaken in Northern Kenya, it was intended that the experience gained so far, and the practical application of that experience in management activities, be appropriately applied across regions in the arid zone of Africa. This applies particularly to indigenous vegetation management, which is important in maintenance of ecological stability and biodiversity in this zone. It is anticipated that vegetation management practices proposed in the resource management guidelines could make a valuable contribution to the control of desertification throughout the arid zone; and this would also contribute towards the aims of the UN Convention to Combat Desertification, especially to the implementation of its African Annex and the Urgent Action for Africa. The PDF grant will be used to elaborate the follow up program that will address this global need.

Description of PDF Activities

32. The following activities will be undertaken with PDF-B funding:
 - (i) Suitable demonstration pastoral communities in Botswana, Kenya and Mali for the various components of the project will be identified. Factors to be considered in the selection of sites will include the extent of degradation and its impact on biodiversity; biodiversity significance; and, ecological zones with varying isohyets. A critical element in the selection process will be interaction with local stakeholders, particularly at the community level, who will play an important role in helping to determine the scope and nature of activities. Resources will be used to facilitate consultations with pastoral communities in the demonstration areas aimed at getting agreement for their participation in the project.
 - (ii) Common indicators to be monitored in the ecosystems selected for project activities will be identified.
 - (iii) An analysis of incremental cost will be undertaken as part of PDF activities. This will include a determination of the economic significance of known degradation, as well as baseline and alternative rehabilitation activities.

- (iv) Type of training activities at scientific, management, planning and local level to be carried out during project implementation will be determined.
- (v) Resources will also be used to convene consultations with pastoral communities in the specific areas where the project will be implemented, as well as for the formulation of detailed implementation plans and strategies. This will include consultations on specific incentives to encourage more efficient use of resources, including water development, rotation and deferred grazing, feed supplement and animal health.
- (vi) Working relations will be established with various studies and management activities that are being undertaken in the participating countries. Collaborating institutions at the national level, including their roles in project implementation, will be identified.
- (vii) Co-financing arrangement for the project will be finalized.
- (viii) Final project document with all the components, which will include cost tables and implementation time table will be prepared.

33. These activities will take place under the guidance of an Advisory Committee comprising representatives of UNDP/UNSO, UNEP, the GEF operational focal points of the participating countries, and the UNDP Resident Representatives. UNDP will implement components related to consultations with pastoral communities.

to be Finalized by the PDF

34. PDF-B funds will be used for the following preparation costs:
- ▶ International consultants, who are experts in indigenous vegetation management guidelines, to advise the governments and help draft the project proposal.
 - ▶ One local consultant in each participating country to design in-country activities and organize consultations with stakeholders.
 - ▶ Three consultations with technical experts: at the commencement, midway and at the end of the PDF to review the final project brief.
 - ▶ Meetings between the Advisory Committee and the participating countries.
 - ▶ Consultations with local stakeholders, (\$30,000 to be allocated to UNDP).

Costs

ITEM	GEF	GOVT.
International consultants	50,000	---
Three local consultants	70,000	
Travel of consultants	25,000	
Consultations/Workshops	160,000	30,000
Preparation of final doc.	25,000	
Total	330,000 ✓	

Outputs

- ▶ Full elaborated project document for implementation of the project.
- ▶ Local communities and collaborators in the Project identified.
- ▶ Clear calculation of incremental costs.
- ▶ Sensitized collaborators in the project through the workshop.

Special Features

- ▶ Project will be built on solid scientific information.
- ▶ Project will take advantage of research and work going on in other centres around the world.
- ▶ Project will facilitate exchange of information between these centres and the network of ADALCO / AMCEN (Arid Lands Committee of the African Ministerial Conference on Environment).
- ▶ Scientists, politicians, planners and resource users will interact at the field level.
- ▶ UNEP/UNDP Collaboration

May 26, 1997