PROJECT BRIEF

1. Identifiers:

Project Title:	*In-situ* conservation of endemic ruminant livestock in West Africa
Project Number:	PIMS 1119
Duration:	10 years
Estimated Start Date:	Q1 2005
GEF IA:	United Nations Development Program
Management Arrangement:	NGO Execution
Executing Agency:	International Livestock Research Institute
Requesting Countries:	Gambia, Guinea, Mali and Senegal
Eligibility:	Each of the four participating countries has ratified the UN Convention on Biological Diversity (10/6/94 for the Gambia, 7/5/93 for Guinea, 29/3/95 for Mali, and 14/6/94 for Senegal)
GEF Focal Areas:	Biodiversity, with relevance to the cross-cutting theme of land degradation
GEF-OP:	OP 13 - Agrobiodiversity
GEF-Strategic Priority:	BD-2 - Mainstreaming biodiversity in production sectors and landscapes

---

2. Summary:

Populations of endemic ruminant livestock in four West African countries represent a highly diverse "genetic treasure trove", which is under increasing threat of genetic dilution and extinction. The proposed GEF Full Project will remove barriers to the *in-situ* conservation of three priority endemic ruminant livestock species – N'dama cattle, Djallonke sheep, and the West African Dwarf goat. In addition, the project will develop and implement models at twelve project pilot sites for community-based conservation and management of critical habitat for these species, thereby demonstrating strategies for preserving the unique genetic trait/habitat complexes that are of global significance.

By the end of its ten year period, the project will have produced the following results: (a) models for community-based land use planning and sustainable natural resource management to ensure the conservation of ecosystems for endemic ruminant livestock; (b) an increase in the relative share of endemic livestock breeds in herds of selected project pilot sites; (c) enhanced productivity of purebred species through selective breeding and production improvements, with a view to strengthening food security, increasing endemic livestock producers' incomes, and enhancing incentives for in-*situ* conservation; (d) incentive schemes to foster optimal valorization of endemic livestock established, such as building up prestige for owners (e.g., through certification, fairs, and competitions) and better marketing and distribution of dairy products and crafts; (e) increased offtake and exports of endemic purebreds to neighboring countries; (f) a system of regional cooperation and exchanges relevant to endemic ruminant livestock; (g) harmonized sub-regional policies and legal frameworks for livestock management, including transhumance (herd movements); and (h) endemic livestock classified and inventoried using genetic markers (supplemented by indigenous systems of classification). Strengthening of the capacities of all relevant actors to promote *in-situ* conservation of livestock and their habitat will be integrated across all of the project activities.

The project will adopt a strategy of ensuring conservation of endemic ruminant livestock and their habitat, while at the same time promoting sustainable development and sustainable natural resource management within the sub-region. The participation of the AfDB will be instrumental in assuring long-term sustainability of GEF interventions. The project will be integrative, taking into account the relations between animal genetic resources, ecosystems, production systems and human population welfare.

The project design is experimental, developing and testing an integrated approach to livestock conservation and management that simultaneously addresses livestock breeding and productivity, market development and economic policies, incentives and distortions, traditional and evolving patterns of resource use and land tenure, policies and legal frameworks, and information sharing and communication at the national and international levels. This is the first project to undertake a comprehensive approach that combines all of these elements, and attempts to address the viability of endemic ruminant livestock raising at the community level (project pilot sites) as well as at the national and sub-regional level.

---

3. Costs and Financing (US$):

GEF:	
Project	10,000,000
PDF B	470,000
PDF A	25,000
Sub-total GEF:	10,495,000
Cash Co-financing:	
African Development Bank	14,123,000
In-Kind Co-financing:	
International Livestock Research Institute	1,070,000
International Trypanotolerance Center	1,000,000
Department of Livestock Services (Govt. of Gambia)	850,000
Direction National de l'Elevage (Govt. Of Guinea)	850,000
Direction National de l'Appui au Monde Rurale (Mali)	850,000
Direction de l'Elevage (Govt. of Senegal)	850,000
Sub-total in-kind co-financing:	5,470,000
Total Co-financing:	19,593,000
Total Project Cost:	30,088,000

4.	**Associated (Baseline) Financing:**	316,390,000
	GEF Alternative Total (including PDF-B):	346,478,000

5. Operational Focal Point Endorsement:

Date of endorsement: Letters of endorsement attached (Annex 2B)

GEF Operational Focal Points

- Gambia: Momodou Sarr, Executive Director, National Environment Agency, 5 Fitzgerald Street, PBM 48, Gambia; TEL:220 228056; FAX :220 229701; nea@gamtel.gm
- Guinea: Kadiatou N'diaye, Sécrétaire Générale du Sécrétariat Permanent du Conseil National de l'Environnement; Ministère des mines, de la géologie, et de l'environnement, BP: 245 Conakry, Guinee, Tel:(224) 34-20-76
- Mali: Yaya Tamboura, Secretariat Technique Permanent du Cadre Institutionnel de la Gestion des Questions Environnementales (STP/CIGQE), BP 257 Bamako, Mali. stp@timbaggo.com.ml
- Senegal: Fatima Dia Toure, Director, Department of Environment and Classified Facilities, Ministry of Environment, 23 Rue Colmette, BP 6557, Dakar-Etoile Senegal; TEL: (221) 821-0725; FAX: (221) 822-6212; fdtoure@metissacana.sn

6. Implementing Agency Contacts:

- Regional: Abdoulaye Ndiaye, UNDP/GEF Regional Coordinator, Biodiversity and International Waters for West/Central Africa, PNUD , Immeuble Faycal, 19 Rue Parchappe - BP 154, Dakar, Senegal, Tel: (221) 849 1778, Fax: (221) 849 1794, abdoulaye.ndiaye@undp.org
- Gambia: Ms. Haddijatou Lamin-Njie, Programme Officer (Environment/CDF), UNDP Gambia, UN House, Cape Point, Banjul, The Gambia, Tel (220) 494825, Fax: (220) 494758, registry.gm@undp.org
- Guinea: Mohamed Efas Sylla, UNDP-Guinee, BP 222 Conakry, Guinee, Tel: 00224-41-15-58, Mohamed.efas.sylla@undp.org
- Mali: Aida M'bo Dembele, UNDP Resident Representative, UNDP-Mali, BP 120 Immeuble Hamacire N'Doure, Bamako, Mali, Tel: (222) 36 94; (222) 43 80; (222) 37 23; aida.dembele@undp.org
- Senegal: Arona Fall, Assistant Resident Representative, UNDP-Senegal, BP 154 Dakar, Senegal, Tel: 00221-839-9054; arona.fall@undp.org

List of Acronyms

ACEP	Alliance de Crédit et d'Epargne pour la production
AfDB	African Development Bank
AnGR	Animal Genetic Resources
CEDEAO	Communauté Economique des Etats d'Afrique de l'Ouest (West African Economic Community)
CILSS	Comité Inter-Etat pour Lutte contre la Secheresse au Sahel (Inter-State Committtee to Combat Desertification in the Sahel)
CIRAD	Centre de Coopération Internationale en Recherche Agronomique pour le Développement (Agricultural Research Center for International Development)
CIRDES	Centre International de Recherche-Development sur l'Elevage en zone Subhumide (International Center for Livestock Research and Development in Subhumid Zones)
CORAF	Le Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricoles (West and Central African Council for Agricultural Research and Development)
CSE	Centre de Suivi Ecologique
DIREL	Direction de l'Elevage (Senegal)
DLS	Department of Livestock Services (Gambia)
DNE	Direction National de l'Elevage (Guinea)
DNAMR	Direction National de l'Appui au Monde Rurale (Mali)
ECOWAS	Economic Community of West African States
EDPA	Environment, Development and African Perspectives
ERL	Endemic Ruminant Livestock
EU	European Union
FAO	Food and Agriculture Organization
FARA	Forum Africain pour la Recherche Agricole
GEF	Global Environment Facility
GIS	Geographic Information Systems
ICRAF	International Center for Research in Agroforestry
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics

ILRI	International Livestock Research Institute
ITC	International Trypanotolerance Center
LMB	Livestock Marketing Board
NAPCD	National Action Programme to Combat Desertification
NAR	National Agricultural Research Centers
NBSAP	National Biodiversity Strategy and Action Plans
NEAP	National Environmental Action Plan
NEPAD	New Partnership for Africa's Development
NGO	Non-Government Organization
NSC	National Steering Committee
NTSC	National Technical Sub-Committee
OMVS :	Organisation pour la Mise en Valeur du Fleuve Sénégal
PACE :	Programme Africain de Lutte contre les Epizooties (African Program for the Fight against Epizootics)
PARC	Pan African Rinderpest Campaign
PDF	Project Development Facility
PIR	Project Implementation Review
PPR	Principal Project Representative (PPR)
PROCORDEL	Programme Coordonné de Recherche Développement en Elevage (Research and Development Project for Livestock Farming in West Africa)
PTC	Project Tripartite Committee
RSC	Regional Steering Committee
RTSC	Regional Technical Sub-Committee
SLSC	Site Level Steering Committee
TCP	Technical Cooperation Programme
UEMOA	West African Economic and Monetary Union
UNCBD	United Nations Convention on Biodiversity
UNCCD	United Nations Convention to Combat Desertification
UNCDF	United Nations Capital Development Fund
UNDP	United Nations Development Programme

UNEP United Nations Environment Programme

1. COUNTRY OWNERSHIP

1a) Country Eligibility

1. Each of the four participating countries has ratified the UN Convention on Biological Diversity (10/6/94 for the Gambia, 7/5/93 for Guinea, 29/3/95 for Mali, and 14/6/94 for Senegal) and is eligible for technical assistance from UNDP.

1b) Country Drivenness

Project Linkage to National Priorities, Action Plans and Programs

2. The project is consistent in its orientation with the general environmental policy objectives as defined by the four countries, in particular the strategies and action plans for the implementation of the Convention on Biological Diversity. It is also consistent with the strategies to combat poverty, which now constitute the foundation of these countries' development policies.

3. In the Gambia, livestock resources are vital to the country's well-being and prosperity. The country has a rich stock of livestock resources, with a cattle population estimated at 364,000 heads, and sheep and goat populations estimated at 160,000 and 230,000 heads respectively. The livestock sub-sector is one of the fastest growing sectors within the agricultural sector, contributing about 24% of Agricultural GDP. The National Environment Management Act (NEMA) of 1994 includes specific provisions for the conservation and sustainable use of biological resources and requires lead agencies to come up with specific strategies for their conservation. The National Biodiversity Strategy and Action Plan (NBSAP) of 1999 provides a comprehensive framework for sustainable biodiversity conservation and management, including an emphasis on *in-situ* conservation of Animal Genetic Resources (AnGR) as one of the means of conserving biological diversity in the country. The proposed project also addresses the concerns of the Gambia Environmental Action Plan (GEAP), which lists the conservation of genetic resources among its priorities, and calls for strategies to 1) assist and encourage producers to adopt improved land and natural resource management practices; 2) develop an effective government/community partnership to ensure rational management of natural resources; and 3) develop local area integrated management plans. Habitat conservation is also a national priority, and to reverse the loss of critical biodiversity habitat, the government has set aside protected areas amounting to 3.5% of the country's total land area, while the Gambia's new wildlife policy has set a target to increase this to 5% of the total land area. In the livestock sub-sector, the project will support the Gambia's Rural Sector Support Policy (RSSP), which is aimed at increasing rural productivity, including that of endemic livestock, and also seeks to attain food security, to generate foreign exchange through the export of livestock and its products, and to increase employment in rural areas. In addition, the Natural Resource Management Sector Policy (2001-2020) assigns a special emphasis to the livestock sub-sector, and seeks to contribute to the diversification of agriculture and rural incomes. The RSSP also places emphasis on environmental considerations by ensuring that livestock numbers do not exceed ecosystem carrying capacities.

4. In Guinea, the Ministry of Agriculture and Livestock, under Decree No. 94/108 of 03 November 1994, is charged with management of livestock resources (including endemic livestock), with three primary goals: to promote livestock raising activities within the context of agricultural development, to promote the improvement

of animal production, and to maintain and improve animal health. Within the Ministry, the Direction Nationale de l'Elevage (DNE) takes the lead role in livestock programs, in collaboration with the Ministry of Environment, the Institute of Agronomic Research of Guinea, the Ministry of Land Administration, and others. Like other countries in the sub-region, Guinea has undertaken to revise it agricultural policies and programs. In conformity with the general guidelines set forth in its Agriculture Development Policy (LPDA) of 1987 (renewed in 1997), the country defined a strategy and action plan for the development of the livestock sector in the short and medium terms (1997 - 2010). The LPDA outlined four priorities for livestock management in Guinea: exclusive utilization of local breeds; rural development linked to improved livestock performance; active participation of rural communities; and the regionalization of programs. Within the strategy for improved livestock performance, the selective breeding of N'dama cattle among small farmers was identified as a priority activity. The proposed project addresses the four main priorities of the LPDA, and also address several priorities of Guinea's National Biodiversity Strategy and Action Plan (NBSAP), *inter alia*: (i) strengthening *in-situ* biodiversity conservation with popular participation, and (ii) sustainable use of biodiversity (through the restoration of degraded ecosystems, promotion of alternative sources of energy, and creation of innovative funding mechanisms for biodiversity conservation initiatives).

5. In Mali, the National Environmental Action Plan and the National Action Programme to Combat Desertification (PNAE/PAN-CID) have adopted as a priority goal the optimal improvement of animal production and the expansion of animal draught cultivation, while preserving the natural environment. Furthermore, the NBSAP lists as one of its five primary objectives the preservation of local varieties and breeds of domestic animals under the threat of extinction. Mali has developed and is in the process of implementing a Pastoral Code, which will define the roles, rights and responsibilities of pastoral communities, placing primary responsibility for managing pastoral lands on the new territorial collectives being created throughout the country. The new pastoral code defines many aspects of pastoral land management, including obligations to support the fight against desertification, to maintain natural ecosystems, and to ensure habitat conservation. For example, Articles 9 and 10 of the code place the obligation on pastoral land managers, in their use of forest resources, to "conform to all legislation relative to protection of the environment and the management of natural resources". The proposed project will support these integrated ecosystem management objectives, both at the project site level and at the policy level. Since 1991, Mali has undertaken a program of decentralization, where the State shares resources and responsibilities with three levels of territorial collectives: Regional, District, and Commune. During this period, 682 new communal collectives have been established. Among their responsibilities are protection of the environment and management of natural resources. The Government of Mali has also launched land management programs to improve stakeholder participation in land management decisions, namely the Scheme for the National Management of Territory (SNAT), Schemes for the Management and Development of Regions (SRAD), and Schemes for the Management and Development of Districts (SADC), which are still under development. Finally, Mali has developed a National Strategy to Combat Poverty (SNLP), which recognizes the degradation of natural resources as an important cause of poverty. The proposed project's strategy of developing community management of livestock habitat and resources (forage, water, etc.) will support these decentralization and territorial management efforts in Mali.

6. In Senegal, the NBSAP elaborates a number of actions contained in the National Environmental Action Plan relevant to biodiversity conservation. These actions are aimed first and foremost at those ecosystems with the highest endemic species, and protecting habitats for rare, threatened or endangered species. One particular priority, expressed in the NEAP and also reflected in the goals of the Forest Plan of Action of

Senegal (PAFS), the National Action Plan to Combat Desertification (NAP/LCD) and the NBSAP, is the sustainable management of natural resources in the forestry sector, and the protection of forest resources from bushfires and soil degradation. The NBSAP advocates the integration of measures for *in-situ* conservation of animal and plant species within rural planning and development programmes. In addition, it stresses the need to establish mechanisms to strengthen the regulation on the introduction of exotic genes. The proposed project addresses all six general strategic options of the NBSAP, including: strengthening the capacities of various actors for biodiversity conservation; and developing sub-regional and international cooperation in the area of biodiversity management. In the livestock sector, Senegal's Policy on Livestock Development and the Livestock Action Plan has set production intensification and ecosystem preservation as priority goals. Furthermore, the Economic and Social Development Plan (1996), the Triennial Program for Public Investments and Actions (PTIP), and the National Plan for Land Management all emphasize promoting the competitiveness of productive/commercial sectors, including: modernizing the techniques of the livestock sector (improved forage and water systems, modernized slaughterhouses, and improved access to markets); artificial insemination and genetic improvement for dairy cattle; institutional support to herders' associations; and improved branding of cattle.

1c) Endorsement

7. The project has been endorsed by the GEF Operational Focal Point in each participating country, in letters dated June 1, 2004 (The Gambia), May 17, 2004 (Guinea), May 20, 2004 (Mali), May 19, 2004 (Senegal) – see Annex 2 B for copies of letters.

2. PROGRAM & POLICY CONFORMITY

2a) Program Designation and Conformity

Eligibility under the CBD

8. This project is designed to support the primary objectives of the Convention on Biological Diversity: the conservation of biological diversity, the sustainable use of its components, and the equitable sharing of the benefits arising out of the utilization of these components. By integrating conservation and sustainable use of biodiversity into relevant plans and policies, the project will fulfill the requirements of: Article 6 (General Measures for Conservation and Sustainable Use) - by the realization of relevant components of each country's National Strategy and Action Plan for Biological Diversity; Article 8 (*In situ* Conservation) - by establishing and/or strengthening *in-situ* dispersed nucleus breeding herds of endemic ruminant livestock; Article 10 (Sustainable Use of Components of Biological Diversity) - by furthering the development and demonstration of endemic livestock raising practices that minimize adverse impacts on biological diversity and provide incentives for sustainable use; Article 11 (Incentive Measures) – by creating economic and policy incentives promoting endemic livestock production and marketing; Article 12 (Research and Training) - by promoting research on endemic ruminant livestock production, providing training in technical and managerial areas, and developing linkages for exchange of information; Article 13 (Public Education and Awareness) – by creating and implementing education and awareness programs for local populations, key decision makers, and the general public; and Article 17 (Exchange of Information) – by establishing sub-regional information networks on

endemic ruminant livestock production and marketing, and by disseminating information and lessons learned to the general population and other natural resource managers.

Eligibility for GEF Financing

9. The project's focus on the *in-situ* conservation of endemic ruminant livestock fits within the thematic area of agrobiodiversity. The proposed project supports the framework established under GEF OP13 - (Conservation and Sustainable Use of Biological Diversity Important to Agriculture), in that it seeks to promote the conservation and sustainable use of genetic resources important for food and agriculture, as well as the fair and equitable sharing of benefits arising from the use of these genetic resources, while at the same time linking such work to conservation of productive landscapes and natural habitats. The project also supports OP13 priorities for integrating agricultural biodiversity conservation and sustainable use objectives in land use and natural resource use management plans, and for promoting the positive impacts, and mitigating the negative impacts, of agricultural systems and practices on biological diversity. The project meets the guidelines established under OP13 on incremental efforts, as it will produce considerable benefits accruing to both global and national/local levels, and will mobilize significant co-financing from various technical and financial partners.

10. The conservation of arid and semi-arid lands, especially in Africa, is a priority for the GEF portfolio, and the proposed project will support this priority. By protecting critical habitat for endemic ruminant livestock, the project will have beneficial impacts related to arid and semi-arid ecosystems (OP 1) as well as forest ecosystems (OP 3), and the project's focus on reducing the threat of deforestation and degradation of grazing lands will help to prevent land degradation (OP15) in the project zone.

11. The proposed project also supports the goals of Strategic Priority 2 (Mainstreaming Biodiversity in Production Landscapes and Sectors) of the Strategic Priorities for the Biodiversity Focal Area of the GEF. The project will facilitate the mainstreaming of biodiversity within production systems by strengthening local, national and sub-regional institutional capacities for sustainable management of endemic ruminant livestock and their habitat, and by building partnerships between agencies, market players, and local communities. The project also will support the development of market incentives such as improved production processes and marketing and distribution of endemic ruminant livestock and livestock products, in partnership with private sector stakeholders and rural endemic livestock producers. Finally, the project will promote demonstration programs at twelve project pilot sites in the four target countries that will provide a variety of management and production models for replication elsewhere within the sub-region and internationally. Overall, the project interventions will foster the integration of biodiversity conservation within the broader development agenda in the target countries, with the majority of the benefits delivered at the local level through capacity building and improved economic opportunities.

2b) Project Design

2bi. Project Background and Context

Environmental Context and Globally Significant Biodiversity

12. The project target zone consists of eastern Gambia, southern and southeastern Senegal, western and southern Mali, and central and southern Guinea (see Annex 2I – Maps). This transboundary zone consists of four vegetative formations, dominated by wooded savannas, as well as shrub savanna, open forest, and riparian gallery forests. The tree strata is dominated by species such as *Daniella oliveri, Anogeissus leocarpus, Khaya senegalensis, Burkea africana, Bombax costatum, Pterocarpus erinaceus, Terminalia macroptera, Combretum glutinosum, Enteda africana, Isoberlina doka, Detarium senegalensis*, etc. Although the vegetative formations are fairly similar across this transboundary zone, its topography is more varied. In Guinea, the landscape is highly variable and consists of rolling plains and plateaus broken up by the Fouta Djallon and Nimba Mountains. Southeastern Senegal is dominated by a high plateau and frequent hills, while in Gambia and Mali, the landscape is more flat.

13. Within these landscapes, the project has selected twelve primary pilot sites in which to implement field-level interventions, as well as eight secondary sites for replication of selected activities. These sites represent a wide range of natural ecological conditions, modes of resource management (including sedentary agropastoral systems and migratory grazing systems - transhumance), and degree of prior human induced impact and current threats to ecosystems. Details on these and other factors at the project pilot sites are provided in Annex 2J (Section 1), while an explanation of the selection of these sites is provided in Section 3 b iii below.

14. The objective of the project is the *in-situ* conservation of endemic ruminant livestock, their unique genetic traits, and their habitat in the four target countries within West Africa. There are a number of breeds and strains of endemic ruminant livestock in this region, including the three breeds targeted by the proposed project: N'Dama cattle, Djallonke sheep, and the West African Dwarf goat. During the PDF-A and PDF-B funding phases, literature reviews and field research and interviews were conducted on these and other endemic breeds, with a particular focus on the traits and approximate distribution of endemic cattle breeds in west and central Africa (see Annex 2K). This work confirmed that the three targeted endemic breeds carry genes that are simultaneously responsible for resistance to several diseases in the humid tropics (e.g. trypanosomosis, endoparasites, and dermatophilosis), as well as unique genetic traits that allow them to adapt to challenging ecological conditions. It is believed that these genetic traits have evolved exclusively in West African habitats. For example, the West African Dwarf goat and the Djallonke sheep are believed to have evolved independently from the other small ruminant genetic resources of the African continent.

15. Even more significant is the case of the N'dama cattle, whose center of diversity is believed to be in the Fouta Djallon of Guinea, with additional "original" areas of the breed in Senegal, Mali, The Gambia, Sierra Leone, Guinea-Bissau, Cote d'Ivoire and Liberia. Archeological and genetic studies indicate that African cattle pastoralism originated from an African center of domestication independent of the traditional centers of emergence of agriculture in the Near East and the Indus Valley. The independent emergence of these indigenous African cattle breeds in Neolithic times, of which the N'dama is the only confirmed breed remaining, means that the genetic make-up of these breeds is not only unique but also represents a heritage of thousands of years of adaptation.

16. Of the diseases to which the targeted endemic ruminant livestock breeds are resistant, Trypanosomosis is the most important, and is arguably the single most important constraint to animal production in the subhumid and humid zones of Africa. In 1963, the annual loss in meat production alone was estimated at US$5 billion. Currently, the total loss to agricultural production and social development in tsetse affected areas is estimated at US$50 billion per year. Trypanosomosis control relies on three techniques: trypanocidal drugs, control of

the vector, and production of trypanotolerant livestock. Up to now, vector control has been based on widespread clearing of bush to eliminate the breeding habitats of the tsetse flies, and the use of insecticides to eliminate these vectors. However, these strategies produce serious negative impacts on the ecosystems as they destroy non-target fauna and flora and leave behind chemical residues. Furthermore, all such efforts to date to eradicate tsetse have failed to do so completely. The option of using trypanotolerant livestock reduces or eliminates the use of chemicals and bush clearing for controlling the vector and parasites, contributes positively to a balanced ecosystem health, and preserves globally significant genetic diversity.

17. However, the global significance of endemic ruminant livestock in West Africa does not rest solely on their resistance to diseases. Other traits possessed by these breeds are of equal if not more importance, such as: resilience under adverse climatic and poor resource (feed) conditions; tolerance to high temperatures and humidity; and ability to utilise low-quality (high fibre) diets, etc. The high genetic diversity of endemic ruminant livestock populations in West Africa allows them to respond to different conditions (from semi-arid to semi-humid), and is therefore of major global significance due to the potential utility of these genetic traits in numerous landscapes. In addition, the raising of endemic ruminant livestock, which requires lower inputs and presents less risks from disease and drought then raising exotic breeds, is a significant factor contributing to maintaining household incomes and food security at the local level. Finally, conservation of endemic livestock will contribute directly to the protection of their habitats.

18. Currently, many endemic ruminant livestock breeds are threatened with extinction (see Annex 2K - Table 1). Such breeds as the Manjaca of Guinea-Bissau have practically disappeared, while others such as the Lagune are highly endangered. The largest remaining populations of endemic livestock in the sub-region of Senegal, Gambia, Mali and Guinea consist of N'dama cattle, Djallonké sheep and West African Dwarf goats. Although numbers of these breeds are still relatively high, their future is in jeopardy due to habitat destruction and fragmentation and to high rates of cross-breeding with exotic breeds. In addition, very little information exists on actual populations or rates of cross-breeding of these targeted endemic ruminant livestock breeds, so that the exact magnitude of the threat is unclear.

19. Over time, the populations of these endemic West African livestock have dispersed out of their center of diversity into other parts of Africa. However, populations of these breeds that have dispersed to other areas have undergone higher rates of genetic erosion due to cross-breeding, and tend to be restricted to smaller and more fragmented habitat. Thus, the remaining populations within the sub-region (The Gambia, Guinea, Mali, Senegal) represent the most highly diverse and viable "genetic treasure trove" of these globally significant animal genetic resources.

Institutional, Legislative and Policy Context

20. For the four countries of the sub-region, the first and foremost priority for management of the livestock sub-sector is to seek ways to increase production as a means of attaining food security, to generate foreign exchange through the export of livestock and livestock products, and to provide employment opportunities, particularly in rural areas. To be sure, national policies also place emphasis on environmental considerations, seeking to ensure that livestock numbers are in balance with natural ecosystems and that sustainable practices are utilized, but the gap between policy and implementation in this regard is typically rather large.

21. A review of the national policies for agriculture, livestock and natural resources in the four target countries revealed a number of common policy priorities relevant to conservation of endemic ruminant livestock, their unique genetic traits, and their habitat. These common goals and policies include priorities to: 1) increase the *in-situ* production and productivity of livestock resources to ensure food security, income generation, and employment creation, to reduce dependence on food imports, and to diversity income sources for individuals, communities and nations; 2) establish effective animal disease monitoring and control systems; 3) ensure a balance between livestock and the environment, and integrate crop and livestock production systems so as to reduce environmental degradation and improve soil fertility; 4) promote community-based resource management of livestock herds and habitat, within the framework of decentralization processes taking place in each of the countries; 5) provide linkages and coordinate policies and programs between animal genetic resources and other sectors in the economy; 6) further commercialisation and diversification of short-cycle species (e.g. small ruminants, poultry, pigs and rabbits) to enhance generation of income and reduce environmental degradation; 7) promote value-added activities for primary livestock produce (e.g. production of leather, meat cuts, tanned hides and skins, milk and egg by products); 8) provide support to endemic producer associations in the areas of marketing, product development and promotion, packaging and quality control; and 9) remove barriers to cross-border trade of livestock and livestock products, and to develop regional markets. (Additional information on national policies is provided in Section 1b above).

22. The conservation and utilization of trypanotolerant breeds of livestock – N'dama cattle, Djallonke sheep, and West African Dwarf goats - is one of the key strategies being implemented throughout the sub-region to achieve these policy priorities. In most Sahelian countries, a heightened awareness of the crisis affecting livestock production as a result of degradation of the natural environment has prompted efforts to revise public policies in order to address this crisis through the conservation and improved production of endemic ruminant livestock, as well as the sustainable management of their habitats. In the context and spirit of the Rio Earth Summit, countries in the sub-region have designed instruments for the implementation of the new environmental conventions they ratified and to revise their development policies so as to harmonize them with the recommendations of Agenda 21. In this perspective, the Gambia, Guinea, Mali and Senegal have elaborated environmental action plans to provide guidance for coordination and ensure consistency of natural resources, biodiversity and environmental management policies.

23. However, while policymakers throughout the sub-region are becoming aware of the critical role that endemic livestock breeds must play in enhancing production and incomes while maintaining long-term sustainable practices of livestock and natural resources management, actual policy, institutional and legal changes are still only in the nascent stages. Analyses conducted during the PDF-B phase found that all four participating countries still had much to do to establish and implement policies, laws and regulations to promote the convergence of the biodiversity conservation strategies with the management of endemic cattle. For example, currently there are no laws or regulations in place to control cross-breeding of livestock, despite the fact that genetic dilution is one of the main threats to endemic breeds. In addition, harmonizing policy priorities in the livestock sub-sector with other national development programs and priorities remains to be done, as does strengthening the capacities of public and private actors to undertake new forms of *in-situ* sustainable livestock conservation and management. In most cases, livestock conservation and management remains the responsibility of livestock departments within ministries of agriculture, while habitat conservation remains under the aegis of protected areas or environment departments, and professional staff on both sides have little understanding of or communication with their colleagues.

24. National policies and programs for conservation of endemic ruminant livestock must also fit within the larger sub-regional policy and legal environment. Currently at the sub-regional level, several cooperation agreements have been signed and ratified to ensure cross-border cooperation in the management of livestock. Mali and Senegal concluded an animal health accord of 2 April 1993, with mechanisms to manage transhumance between the two countries in order to better control contagious diseases. Senegal has also concluded an accord with Mauritania for matters of animal health and production of 23 April 1981. In Guinea, national policy calls for the strengthening of cooperation with neighboring countries for *in situ* conservation of animal genetic resources in transboundary protected areas, and the Niokolo-Badiar protected area project between Guinea and Senegal is a testing ground for this cooperation. In Senegal, the government is engaged through its official Policy for Livestock Development in creating regional level linkages between private actors/operators in the livestock industry and government agencies.

25. In addition, several agreements have been concluded in the sub-region specifically to facilitate cooperation in livestock transhumance. Within the framework of the Economic Community of West African States (ECOWAS), decision A/DEC.5/98 relating to the regulation of transhumance between member States was adopted on October 31 1998. This decision has helped countries to organize border frontiers to account for livestock transhumance, so that the movement of herds is now subject to the possession of international certificates of transhumance issued by ECOWAS. These certificates require source countries to coordinate the departure of herds to summer pastures, to ensure protection of local herds, and to inform farmers of the pending arrival of herds in a timely manner. The ECOWAS system also requires recipient government authorities to safeguard herds, to specify entry and exit periods from their territory, and to define precise pasturage zones. In case of conflicts between farmers and herders moving to summer pastures, a conciliation commission has been established composed of representatives of the herders, farmers and the state and local administrations. Apart from the ECOWAS framework, the project's objectives are also likely to benefit from the UNDP/GEF project for "Enabling Sustainable Dryland Management through Mobile Pastoral Custodianship", which specifically aims to study and demonstrate the value and sustainability of pastoral management systems including transhumance). This project is currently under review for PDF-B funding (see Section 4 a ii for more details).

26. In addition to bilateral and multi-lateral agreements, the countries of the sub-region may also be able to utilize existing regional and international frameworks and programs to harmonize their national policies and legislation relating to *in-situ* conservation and management of endemic ruminant livestock. The International Trypanotolerance Centre (ITC) in Gambia is working in partnership with national research systems in order to improve the genetic potential of the N'dama cattle and Djallonké sheep within a general framework aimed at fighting poverty. A similar initiative is under way at the International Center for Livestock Research and Development in Sub-Humid zones (CIRDES) at Bobo-Dioulasso, focusing on other breeds of trypanotolerant livestock, such as the West African Short Horn. The FAO Global Strategy for the Management of Farm Animal Genetic Resources is a world-wide initiative for promoting regional networking and coordination among national research systems and other national centres for the sustainable use of animal genetic resources, and it has established a West Africa Regional Focal Point Office in collaboration with UEMOA, CILSS and CORAF, that is instrumental in supporting national counterparts with capacity building, regional and national data bases on farm animals, and assistance with the development of pilot projects. All these regional and national initiatives are connected in a synergistic network of research institutions (Africa Trypanotolerant Network) which endeavors to advance knowledge of all trypanotolerant livestock breeds. In addition to these existing programs, the countries of the sub-region may also be able to take advantage of organizations to

which they all belong already, including the Inter-State Committtee to Combat Desertification in the Sahel (CILSS), the International Offices of Epizootics, and the Inter-African Bureau of Animal Resources.

Socio-Economic Context

27. The total human population of West and Central Africa in 1999 was approximately 317 million, or 50.3 % of the total for Sub-Saharan Africa. Human population growth in the region during the 1990's was estimated at 2.8% per annum, while in urban areas that figure was almost 6%. Given these growth rates, the population "doubling time" in West Africa is approximately 23 years. Considering these very high growth rates, and the increasing demand for livestock products as a percentage of agricultural production, livestock genetic resources will be expected to play increasingly important roles in the agricultural and social economies of West Africa nations.

28. Agriculture, with the livestock sector as a major component, remains the main contributor to Gross Domestic Product (GDP) in the four countries of the sub-region. Agricultural management is the main source of livelihood in the sub-region, from 60% of the labor force in Senegal up to 80% in Mali. The main production objectives of small-scale livestock herders, who are the vast majority of livestock producers, are income generation and savings, meat and milk production for home consumption, manure, and draught power. Because of the variety of critical functions for which livestock are used, and the widespread participation in livestock production, livestock play a major role in the alleviation of poverty, hunger and malnutrition throughout rural areas within the sub-region. Investment in livestock is a priority for many rural inhabitants, who view livestock as income generating and as a means of saving while protecting against inflation. Livestock also are of cultural importance in many traditional and religious ceremonies.

29. The proposed project zone is populated by two major ethnic groups: the Peul and the Mande. The former specialize in pastoralism and agropastoralism, while the latter are essentially farmers who may also raise livestock on a smaller and less extensive scale. There are four main livestock production systems found within the sub-region, all of which include the use of endemic ruminant livestock breeds:

- Agro-pastoral systems with cropping as the major activity, found in more humid areas. The main feature of this system is the sedentary nature of livestock management, where dry season feed is obtained from crop residues and water is available in ponds and riparian areas.
- Agro-pastoral systems in which livestock raising is associated with floodplain agriculture, practiced along river courses and in river deltas.
- Agro-pastoral systems in which livestock raising is associated with rainfed agriculture, where rainfall is above 300-350 mm. Mobility is a key feature of this system, and transhumance is practised both during the cropping season and the dry season.
- Pure pastoral systems, practiced in semi-arid areas where crop agriculture is not possible, and where feed and water resources are scarce. Nomadic herders graze their livestock in selected areas during the rainy season, and during the dry season, herders and their livestock migrate to permanent water sources and pastures, often over great distances.

30. Agropastoralism can range from more or less sedentary systems, with livestock grazing occurring on communal land in a relatively small radius around settlements, to systems with significant herd mobility. In most agro-pastoral systems, farmers grow cereals (rice, millet, sorghum, maize) for home consumption as well

as cash crops (e.g. groundnuts and cotton). These households also raise cattle, sheep, goats and poultry, although differences in the holdings are quite large (e.g. a significant percentage of farmers may not own cattle). After harvest, animals have access to millet, rice and sorghum residues that are consumed directly in the field. Milk offtake for household consumption is a key function of cattle in agro-pastoral farming systems. Milk surplus during the rainy season is marketed for cash generation and this is being further developed through dry season stabling with improved habitat, health care and feed supplementation. As for meat production, endemic ruminant livestock herds supply slaughter animals to urban areas, with the average live animal offtake marketed for meat at about 10%.

31. Livestock production contributes to crop cultivation in terms of providing organic fertilizer, draught power, and capital for purchasing agricultural inputs. Nutrient cycling for the restoration of soil fertility through use of animal waste (urine, faeces) is a critical feature of mixed farming systems, as manure is the cheapest and most readily available source of soil nutrients. The use of animal power for cultivation and transport is extending into areas where endemic livestock are kept, because of the development of cash crops such as cotton and groundnut. Draught animal power is used for ploughing, weeding, ridging and harvesting as well as for transport.

32. Pure pastoral production is characterized by the need for livestock mobility in order to be able to feed and water large herds on a sustainable basis. Pastoral migration in the project zone can be quite extensive and transfrontier, e.g. between the Kayes Zone of Mali and the Kedougou Zone of Senegal. However, the dominant form of pastoralism is of relatively shorter distances (e.g. 30-70 km). Increasing conversion of range and forest lands to crop cultivation is having severe effects on the viability of pastoralism in this area, particularly as the most productive lands are encroached upon, denying pastoralists and their livestock both good quality and quantity of feed and water. (See Annex 2I - Map 6 of Transhumance in Guinea for an example of transhumance in the sub-region)

33. Endemic livestock producers within the sub-region face a number of challenges. Scarcity of fodder and water during the dry season, exacerbated by widespread bushfires, are important constraints to cattle and small ruminant production. Unclear land tenure systems, complicated by the transboundary nature of much of the transhumance, limit the coordinated and efficient management of water and feed resources. In addition, the frequent outbreak of animal diseases is a major constraint on animal production and productivity. Blackquarter, hemorrhagic septicaemia, helminthosis, trypanosomosis and calf scouring are among the main causes of mortality and morbidity in cattle. Intercurrent infections, poor nutrition and other stress factors during the dry season can cause breakdown of trypanotolerance in N'Dama cattle, Djallonké sheep and West African dwarf goats in areas of high tsetse challenge. More susceptible animals, such as Zebu cattle and equines, cannot withstand even low challenge levels and consequently require a more expensive management system. Exotic breeds and their crosses with local N'Dama cattle are particularly susceptible to epizootic diseases and require a higher level of veterinary care in intensive or semi-intensive systems.

34. Marketing of endemic ruminant livestock in the sub-region is primarily done on a local basis and through informal networks with poor price and availability information. There are no formally structured export networks at all, and export markets have actually declined in the past decade with the dissolution of livestock marketing boards and other support structures (although small ruminant trade has continued to flourish in some areas, for example between The Gambia, Senegal and Mauritania). Some incomplete data on livestock exports is available, for example showing that 300 cattle, 5,000 sheep and 3,000 goats were exported in

1999 from Guinea to Senegal and Guinea-Bissau, or that Senegal exported 1,759 cattle, 2,505 sheep and 2,598 goats mainly to Guinea, the Gambia and Guinea-Bissau in that same year. On a larger scale, Mali exported 210,000 cattle and 21,400 sheep and goats in 1998, mainly to Ivory Coast, Ghana and Algeria.

35. Despite the poor performance of livestock markets in the sub-region, particularly for exports, there is actually growing demand for livestock and livestock products, both domestically and internationally. Currently, there is high demand from neighboring countries such as Ghana, Benin, Togo, Nigeria and Burkina Faso for pure breeds of West African endemic livestock to be used for cross-breeding to raise the disease tolerance of their livestock. The Gambia has a long standing program of exporting N'dama bulls to Nigeria for breeding purposes, but other opportunities to meet this demand have yet to be pursued. Additional details on socio-economic conditions in each of the four target countries are provided in Annex 2J (Section 2).

Threats to endemic ruminant livestock breeds

36. One third of global farm AnGR, comprising some 3,800 breeds across 40 species, are at risk of extinction, and 60% of these are in developing countries[1]. In sub-Saharan Africa, it is estimated that 22 (13%) of the cattle breeds which existed at the beginning of the 20th century have become extinct[2]. Investigations during the PDF-B have shown that the populations of endemic ruminant livestock in West Africa are currently threatened with significant population decline, including possibly extinction, as well as the dilution of their unique genetic traits.

37. Although numbers of the target breeds for this project (N'dama cattle, Djallonké sheep and West African Dwarf goats) are still high, their future may be in jeopardy due to a variety of factors. The sources of the threats to these populations are varied and complex, but they can be broadly grouped into three primary categories: 1) destruction and degradation of habitat critical for endemic ruminant livestock; 2) cross-breeding between endemic ruminant livestock and exotic livestock breeds; and finally, 3) abandonment of endemic ruminant livestock raising due to production and market constraints. See Annex 2L – Project Conceptual Model for a diagrammatic presentation of the threats, root causes, and proposed project interventions.

Destruction and Degradation of Habitat for Endemic Ruminant Livestock

38. The primary habitat for endemic ruminant livestock in West Africa is closed wooded savannas (dominated by *Daniella oliveri, Isoberlinia doka, Bambusa abyssinica* in the semi-humid zones and *Acacia-Combretum* associations in semi-arid zones). This habitat is under sustained and severe pressure from numerous sources, most of which are relevant at most or all of the proposed project pilot sites. Perhaps the most severe threat is the outright destruction of forest habitats, stemming from three primary causes: extension of agricultural lands, demand for fuelwood/charcoal, and uncontrolled and increasingly severe bush fires. Throughout the region, a significant increase in agricultural lands has largely come at the expense of wooded savannas that act as optimum pasture land for endemic ruminant livestock, with the wholesale transformation of the landscape to accommodate agriculture. Cutting of the forests for fuelwood and charcoal is equally severe, and is done for both subsistence and commercial purposes (including illegal trans-border sales to countries with better legislation/enforcement prohibiting such activities). As for bush fires, these have

[1] FAO (2000): *World Watch List for domestic animal diversity (3rd Ed.)*

[2] Rege (1999): Animal Genetic Resources Information (FAO), Vol. 25, p1-25

increased in recent years as more persons, including many seeking alternative livelihood sources who are unfamiliar with proper conduct, attempt to use forest resources for activities such as hunting, apiculture, mining, and land clearance for agriculture.

39. In addition to outright habitat destruction, there is also the problem of pollution and land degradation of remaining endemic ruminant livestock habitat. Small-scale mining is a significant problem in some areas, while increased erosion and salinization where agriculture is practiced on marginal lands, as well as unsustainable agriculture practices (e.g. decreased fallow periods of less than five years), are problematic throughout the sub-region. As agricultural lands spread in the sub-region and unsustainable agricultural practices degrade the landscape, livestock herders feel more and more constrained in their access to land, and conflicts between farmers and herders have become increasingly common. Together, the various habitat destruction and degradation pressures are reducing the habitat for endemic breeds to disconnected pockets along river courses and in isolated protected areas.

40. As a result of this habitat destruction and degradation, in most parts of the sub-region the number of livestock per hectare on the remaining pasturelands has increased significantly, further degrading pasturelands. This problem of intensive pressure on the remaining pasture is compounded by several factors. Because of limited infrastructure for watering livestock, herds are concentrated in areas with access to water. Also, the eradication of the tsetse fly in many parts of the sub-region has led many livestock herders to bring their herds of exotic breeds (e.g. Zebu cattle) into areas that previously only supported endemic breeds. Further, many of the farmers in newly converted agricultural land are planting cotton and earning monetary surpluses, which they frequently invest in cattle "savings", further increasing herd sizes. The tradition of using cattle as savings, as well as socio-cultural values associated with cattle ownership, also mean that the rate of destocking is very low in the sub-region, particularly for cattle. Finally, the migration of livestock herds following rainfall (transhumance) has increased in recent years, putting further pressure on remaining pastures.

41. Finally, there are some indications that long-term climate change is reducing the area of habitat suitable for endemic ruminant livestock. A notable decrease of rainfall has been found at many monitoring stations throughout the sub-region, and this decrease is believed to have induced disruptions to the flora and fauna of the area.

Cross-Breeding between Endemic Ruminant Livestock and Exotic Breeds

42. Many breeds of endemic ruminant livestock in the sub-region, including the three primary target breeds for this project (N'dama cattle; Djallonke sheep, and the West African Dwarf goat), are declining as they cross-breed with other, non-native breeds. As a result of this cross-breeding, the endemic breeds are losing certain adaptive characteristics (hardiness, disease resistance) essential for survival and production in their environment. In addition, although cross-breeding has short-term national benefits (increased milk and meat production; increased draught power), in the long run it could result in the elimination of globally significant endemic breeds throughout much of the sub-region.

43. Cross-breeding between endemic and exotic breeds happens for a variety of reasons, both intentional and unintentional. In the former case, because most endemic livestock are relatively low producers of milk or meat, livestock herders and farmers choose to cross-breed with more productive exotic animals, particularly as market demand for meat and milk products has steadily increased in the sub-region. In addition to seeking

higher productivity, many farmers feel that market structures are aligned to value exotic breeds more highly and to distribute them more widely within the sub-region, thereby increasing their value relative to endemic breeds. Contributing to the desire among livestock herders to cross-breed their herds is a lack of awareness of the risks of cross-breeding (most herders consider cross-breeding as a means of strengthening their herds and understand poorly the implications of genetic erosion for long-term health of their herds). Most livestock herders also have a limited understanding of the advantages of endemic ruminant livestock raising, in particular where ecosystems are under pressure and traits such as hardiness and low input needs will become more and more valuable over time. In addition, most farmers who own livestock have weaker cultural attachments to their native breeds than do full-time livestock herders in the sub-region, and significantly less than livestock herders in neighboring areas such as the Sahel.

44. While crossbreeding and breed replacement can be effective means for increasing production, their potential in the tropics is limited to the benign 'temperate environments' of highland areas and where resources are available to ameliorate the environmental stresses of the tropical climate. Unfortunately, introduction of exotic germplasm into tropical countries has been (and continues to be) seen as the solution to low animal productivity even in areas where the exotic genotypes are ill adapted. In many cases, this trend has been responsible for the extinction or severe erosion of the genetic diversity in traditional breeds. This has, in most part, been due to lack of (or inappropriate) assessment of the economics of these interventions. In particular, conventional evaluations of the impact of exotic breeds have often not considered subsidies provided by donors and governments nor have they been based on sound cost-benefit analysis which includes veterinary and other extension support services as well as 'indirect' costs. More specifically, these evaluations have not included an assessment of the increased risk, loss of indigenous farm animal genetic diversity (including specific genes that may have future global economic importance), and disturbances to ecological balance through impacts on other components of the production system.

45. Cross-breeding is also taking place unintentionally due to various factors, the most important of which is simply the increased proximity of endemic and exotic breeds. Habitat degradation is allowing the movement of trypanosensitive breeds of exotic livestock into areas that once harbored tsetse flies and were thus limited to the trypanotolerant endemic ruminant livestock breeds. In addition, as noted above, the size and range of exotic livestock herds has increased greatly, and uncontrolled transhumance is allowing for the mixing of endemic and exotic breeds. Further, programs for artificial insemination frequently use the genetic material from exotic breeds even on endemic breeds, with few quality controls and frequently without the livestock owner's knowledge.

46. As a result of these disparate factors, evidence suggests that crossbreeding between exotic breeds (primarily Zebu) and endemic breeds (N'dama) of cattle in West Africa has increased significantly in the past two decades. In Mali, for example, the population of crossbreed cattle is estimated at more than one million (with an annual growth rate of 5.25%), and the populations of both cross-breeds and purebred exotic breeds are growing much more rapidly than endemic breeds. In the Gambia, studies have shown the presence of genes from non-native zebu cattle in over 50 % of the N'dama sample. Further, there is emerging evidence that the rate of dilution is fast increasing, and given the lack of reliable information on the genetic status of endemic ruminant livestock in the sub-region, the overall impact of these trends remains uncertain and ominous.

Abandonment of Endemic Ruminant Livestock Raising Due to Production and Market Constraints

47. A third important threat to the long-term survival of endemic ruminant livestock breeds in West Africa is the ongoing trend among livestock herders to abandon endemic breeds because of their perceived inferiority to exotic breeds in terms of productivity and marketing. Productivity in terms of animal products (milk, meat) and animal functions (draught power) in particular is cited by many livestock herders as a key reason for switching to exotic breeds and/or cross-breeds. Under some environmental and management conditions, endemic livestock are clearly unable to compete with exotic breeds in productivity, but in other conditions endemic breeds can in fact produce well, if certain constraints are not in evidence.

48. Among these constraints specific to endemic ruminant livestock production is the decline in their feed and water supply from habitat conversion, which in most cases is not adequately replaced by crop residues on newly cleared agricultural lands. Important examples include the decline and/or disappearance of certain vegetation types on which animals are dependent, such as (*Vène*), and of other plants where the branches and leaves are used as feed (*Kad, Vitex doniana, Bauhinia rufescens* and *Bauhinia reticulata, Afzelia africana, Oxythenantera abissynica, Bombax costatum*). In addition, many populations of endemic livestock are subject to mismanagement and malnutrition, because farmers pay more attention to crops or to higher performing exotics, resulting in low productivity and higher mortality rates among endemic livestock. Finally, there is a limited awareness among livestock producers of production and productivity enhancement opportunities with endemic breeds.

49. Rural populations are also abandoning endemic breeds of livestock due to constraints on all livestock production (endemic and exotic), which cause them to focus more activity on agriculture or other rural economic activities, or in many cases, to leave rural areas completely and migrate to the city. Low productivity for livestock is increasingly significant due to reduced feed and water resources for grazing animals. Climatic conditions are such that water scarcity in the dry season continues to worsen and perennial rivers are drying up, while a lack of hydraulic infrastructure such as pumps, wells, ponds and drinking troughs greatly limits the areas available for grazing. Another factor is the weak level of utilization of livestock byproducts, which lessens the overall economic productivity of livestock. In addition, high mortality rates affect all livestock breeds, due to poor veterinary services (few veterinary clinics, very limited medicines and trained personnel) and the presence of endemic infectious diseases such as cattle contagious péripneumonia, small ruminant plague, parasites (helminthes, hémoparasitoses), rinderpest, foot and mouth disease, and Contagious Bovine Pleuro Pneumonia (CBPP). Finally, cattle theft is a significant problem for livestock herders, exacerbated by the absence of reliable national systems of branding. In some zones, despite the implementation of cattle defense committees, farmers continue to lose cattle because they are obliged to keep their herds far from their homes in order to avoid the destruction of the fields of newly arrived agriculturalists.

50. In addition to constraints on the production and productivity of endemic ruminant livestock, the effective and efficient marketing of these animals is also constrained by several factors. Because of these constraints, market demand and valuation for endemic ruminant livestock and livestock products is low, particularly in comparison to demand for exotic breeds, and has led many farmers/herders to abandon endemic livestock in favor of exotics or other marketable products.

51. One of the primary constraints to marketing of endemic livestock in the sub-region is the complete absence of organized distribution channels or market information for these breeds. In addition, there are no viable commercial channels among countries within the sub-region, or with other neighboring countries, for the

sale of endemic ruminant livestock and livestock products, despite the fact that neighboring countries represent a real market opportunity for endemic ruminant livestock products and breeding stock. Finally, herders of endemic livestock have no local, national or regional organizations to support or organize their efforts, so that potential customers remain unaware of endemic ruminant livestock products and producers themselves have only limited awareness of marketing enhancement opportunities.

Root causes of threats to endemic ruminant livestock breeds

52. The primary immediate threats to endemic ruminant livestock in the sub-region, including habitat destruction and degradation, cross-breeding with exotic livestock, and declining interest among local populations in raising endemic breeds, are clear to researchers, policy makers, and farmers/herders themselves. Less obvious are the underlying causes for these threats, which can be classified into four broad categories: socio-economic trends; unregulated and inefficient resource management; decision-making based on inadequate information; and policy incentives/disincentives and market distortions.

Socio-economic trends

53. As noted above, changing ownership patterns for cattle and small ruminants are widespread in the sub-region. One of the primary underlying threats to the long-term viability of rangeland ecosystems in the project intervention zone is an evolving, unsustainable agro-pastoral system characterized by a low rate of cattle de-stocking and the rapid commercialization of small ruminants (sheep and goats). Local populations within this area are apt to buy and sell small ruminants frequently to satisfy their needs for monetary income. On the other hand, these same populations, based on the cultural and savings values associated with cattle, keep as many cattle as possible for as long as possible. Currently, it is estimated that the rate of exploitation of cattle in the area is less than 10% annually. In addition, the promotion of cotton and other cash-earning crops in some areas has resulted in monetary surpluses for some rural inhabitants, which are then typically invested in cattle as a form of savings. As a result, local cattle populations in the project intervention zone are increasing grazing pressure significantly, well beyond the carrying capacities of the rangeland. Further adding to this problem, as agricultural lands expand throughout the region, larger and larger livestock herds are being forced to share smaller and smaller areas of pasture, particularly the dry season pasture that is a commons resource shared by migratory herds. As pasture land becomes scarcer, not only does grazing intensity increase, but the length of fallow periods decreases (often now less than five years), further overwhelming the capacity of the rangeland to regenerate.

54. A second important socio-economic trend is the continued high rate of population growth in the four countries that make up the project intervention zone. Due to this human population increase, habitat for endemic livestock is being increasingly converted to cropland, and deforestation is rampant due to high demand for fuelwood. In southern Mali, for example, land under cultivation increased from 5 to 18% between 1977 and 1994, due in large part to the continue flow of humans and their livestock herds leaving the drought-stricken areas of the Sahel. Similar trends can be seen in southeastern Senegal, due to the decrease of fertility in the so-called Peanut Basin, which pushes farmers to migrate into virgin land in the south. In eastern Gambia, the surface area of cultivated land has doubled in the last 15 years. These pressures are transforming the indigenous woodlands into croplands, open savannas and fallows. In addition, population growth has led to pronounced increases in demand crops (in particular cereals), livestock and livestock products, and forest resources, prompting rural inhabitants to seek out higher productivity livestock breeds, and to engage in more

intensive and often unsustainable resource use. This trend is further exacerbated by the breakdown in traditional resource management rules and practices that has accompanied the large-scale human and animal migration into areas that support endemic ruminant livestock.

Unregulated and inefficient resource management

55. As noted above, the influx of significant numbers of people and animals into the sub-region, as well as the changing patterns of resources use and demand (exacerbated by government policies and subsidies), have led to a decline of traditional rules and practices for resource use/control related to endemic ruminant livestock herds and rangelands. As traditional mechanisms have declined, state-sponsored resource management systems have not materialized to fill the need for coordinated control and use of resources, with existing laws, regulations and enforcement mechanisms for pastoral management, land tenure, and conflict resolution remaining piecemeal and inadequate. In particular, unclear land tenure, combined with increasing competition between agriculturalists and livestock herders for land and water resources, has led to increased conflict between farmers and herders, as well as over-grazing of communal pastures. Also, the lack of cross-border agreements or coordination for management of pasture land and livestock herds, despite increasing patterns of transhumance on the part of livestock herders, has made the sustainable management of communal grazing areas increasingly rare.

56. Inadequate management of resources extends beyond livestock grazing practices and also includes poor coordination between governments and local communities in forest management and protection. Many wooded savanna areas that provide prime habitat for endemic ruminant livestock are at least nominally state-owned, but state forest resource managers typically manage these areas without consulting with local communities, or even more commonly, are absentee landlords who do not manage the areas at all. In both cases, communities frequently view forest resources (fuelwood, timber, non-timber forest products, etc.) as open-access resources and maximize their use of these resources accordingly.

57. Finally, management of endemic ruminant livestock herds is generally limited to the level of the individual herd owner, with little coordination on animal health, breeding, or production/marketing, and almost no support from government extension/outreach services. As a result, there is no coordinated management or conservation of the genetic resources of endemic ruminant livestock, or control of cross-breeding between endemic and exotic breeds, and in fact there are no government policies/strategies or legal framework to support such efforts. In addition, because of the absence of any significant breeding programs for endemic ruminant livestock in the sub-region, farmers and herders managing such herds continue to rely on unimproved breeds, while owners of exotic breeds are consistently provided with improved animal genetic resources. These same farmers/herders also engage in inefficient use of existing and potential feed and water resources, as little has been done by national or international agencies to explore or implement improved feed varieties/growing techniques, expanded and coordinated water management, or other improvements to production inputs for endemic ruminant livestock. Finally, the widespread marginalization of women in the management of endemic ruminant livestock by both policy makers and community leaders alike continues despite the critical role that women play in this sector, most notably in the care, production and marketing of small ruminants and in milk production from all livestock.

Decision making based on inadequate information

58. Awareness among policy makers and farmers/herders themselves of the long-term value of endemic breeds, including their important genetic traits (hardiness, disease resistance) and low-input needs (critical in marginal areas and for poor farmers/herders) is very low. As noted above, this translates into very limited government support for resource management for habitat important to endemic ruminant livestock, or indeed for management, improvement, and promotion of the animals themselves. In addition, however, the misunderstandings about the value of endemic breeds also translates into a range of distorted policy and market incentives/disincentives that further reduce the value of these breeds, and thus the desire among farmers/herders to conserve the animal genetic resources that the animals represent. Policy makers and resource managers also suffer from the absence of data necessary to design effective resource management and conservation strategies and programs, so that even where state attention and resources is placed on effective forest and pasture management, critical data to support these efforts is frequently unavailable.

59. Equally problematic, advocacy & organizational capacity among endemic livestock producers is very limited within the sub-region. Owners of endemic ruminant livestock maintain very few organizations at the local, national, or sub-regional level to promote or educate themselves or others about these breeds, and the majority of herders are unaware of the scope of the threats to these breeds, or of opportunities to improve management and production conditions. It is estimated that only approximately 10% of owners of endemic ruminant livestock breeds in the sub-region participate in any form of organization/association related to this activity. As for women, who play a critical role in the management of some breeds and products, their participation in such entities is close to zero.

Policy incentives/disincentives and market distortions

60. In all four countries of the sub-region, subsidies and policies favoring crop production over grazing have resulted in widespread conversion of grazing lands to agricultural production. This is particularly true for cereals and for cash crops such as cotton, and the monetary surpluses generated by cash crops have frequently been invested in cattle "savings" by farmers, putting further pressure on the remaining habitat for endemic ruminant livestock. In addition, subsidies and policies that promote and subsidize exotic livestock breeds over endemic breeds are widespread, distorting the real cost of production of the different races that otherwise would frequently favor endemic breeds. Conversely, policy and economic incentives to support production and marketing of endemic breeds are largely non-existent. Financing for livestock herders for breed and production input improvements or better range management is very limited, and the banking/credit system is highly centralized and unwilling to provide financing to small-scale livestock owners.

61. In addition to inappropriate policy incentives/disincentives, there are also structural economic and market constraints to the production and marketing of endemic ruminant livestock. Regional markets for endemic breeds are almost non-existent, partly due to a lack of government support and coordination, but also due to trade restrictions and tariffs. As a result, endemic ruminant livestock owners have almost no access to markets in other countries within the sub-region, or to neighboring countries, despite a clear demand for some of their products in these areas (e.g. demand for N'dama breeding animals in much of West Africa). Another structural impediment is lack of any coordinated marketing strategies for endemic breeds, or indeed for basic market information on supply, demand, prices, etc., which greatly limits the ability of endemic livestock producers to expand their markets and secure optimum prices.

2bii. Project Logical Framework

62. The logical framework is presented in a matrix form in Annex 2A.

2biii. Detailed description of goals, objectives, outputs, and related assumptions, risks and performance indicators

Project Rationale

63. The decline and possible extinction of endemic ruminant livestock breeds (in particular, N'dama cattle, Djallonke sheep, and West African Dwarf goats) in the Gambia, Guinea, Mali and Senegal threatens the loss of globally significant animal genetic resources. As these endemic breeds decline in the face of habitat loss, declining interest among farmers/herders, and intentional and unintentional cross-breeding with exotic breeds, their population sizes will eventually become too small to maintain genetic diversity/viability.

64. The countries within the sub-region see their immediate national sustainable development interest as improving breeds and/or adopting new breeds for higher productivity, and converting habitat for cultivation and pasture production. In the short run, these policies may well lead to increased food production and poverty alleviation. However, the long-run implications of such a strategy, without also conserving endemic breeds, will be damaging for countries in the sub-region. While habitat conversion will result in a local retreat of various diseases, in particular trypanosomosis, it is extremely unlikely to fully eradicate such diseases. As such, the need to maintain viable *in-situ* populations of genetically diverse endemic breeds will continue indefinitely in order to maintain necessary genetic traits for disease resistance. Moreover, these same breeds possess critical traits of hardiness (i.e. the ability to survive in drought and other conditions of low and marginal feed and water availability) that will be critical in maintaining animal populations suited to marginal terrain and conditions.

65. A challenge for the project will be overcoming the preference for exotic breeds, and related discounting of endemic breeds, among some policy makers and herders within the sub-region. However, during the project preparation phase - PDF-A and PDF-B implementation phases - the outcome of numerous consultations convinced the project design team that the trend towards exotic breeds is not one of choice, but one driven principally by lack of alternatives and absence of sufficient information, the latter both at the government policy levels and at the herder level. During these consultations, one of the most common questions asked of the project team was: "what can we do to increase off-take and returns from the local breeds, whose husbandry we already know and whose adaptation to local conditions has no rival?". Based on the results of these extensive consultations and other assessments of the institutional, policy, and socio-economic contexts relevant to the project, it is the strong conviction of the project designers that the project strategy to halt and reverse the replacement of endemic breeds with exotic breeds will succeed if implemented with herder groups that develop strong views about the positive attributes of endemic breeds, and who are supported by government policymakers, international institutions, and NGOs with a good understanding of "sustainable agriculture". The premise is that the relatively smaller outputs (meat, milk, etc) from indigenous breeds will be more than compensated for by low inputs in terms of disease control, feed and water requirements, etc. Success at a few pilot sites will underpin and engender broader promotion of the principles and concepts, as herders, government officials, and international program managers all respond most forcefully to demonstrated successes in the field.

66. In the long run, it is in the national interest of all African countries to protect their livestock from trypanosomosis and other diseases, and to maintain genetic information that allows livestock to flourish under severe conditions. In this regard, the conservation of the N'dama cattle is particularly important, as this breed is believed to be the only remaining cattle breed native to sub-saharan Africa, and thus a critical repository of genetic information for future efforts to find genetic traits to allow cattle breeds to flourish in the many varying conditions on the continent. Given the absence of previous programs to assess the genetic information and breed characteristics of the N'dama, conservation of the remaining populations of this breed is of paramount importance. For all three of the target breeds (N'dama cattle, Djallonke sheep, and West African Dwarf goat), the project will choose four sites in each country where these animals are present, thereby helping to possibly conserve up to four distinct populations in each breed. Whether the populations at each priority pilot site are distinct can only be verified through DNA marking, which will be carried out during the Full project. Thus, although the focus of the project is on inter-breed conservation, it is likely also to have beneficial impacts on intra-breed conservation.

67. Endemic ruminant livestock breeds within the sub-region still exist today largely because they can survive in habitats that other breeds cannot, namely habitats that require extreme hardiness and/or disease resistance (especially tolerance to trypanosomosis). However, as habitat conversion continues to reduce the area of tsetse fly infestation, and thus the range of trypanosomosis, endemic breeds are increasingly being forced to compete with exotic breeds. Under good conditions of feed and water availability and animal health maintenance, these endemic livestock breeds do not compete well with exotic breeds in terms of production/productivity, and farmers often elect to cross-breed endemic and exotic breeds, or to switch to exotic breeds completely. Add to this the significant policy and economic incentives and market distortions favoring exotic breeds over endemic breeds, and the decline and even disappearance of endemic ruminant livestock is a grave concern within the sub-region.

Project Approach

68. The conservation of endemic ruminant livestock must take place *in-situ* in order to ensure the long-term viability of the unique animal genetic resources represented by these breeds, and therefore must include the conservation of their native habitat as well. There is growing evidence that without continuous challenge by disease vectors inherent in the indigenous habitats, the unique genetic traits of the West African endemic ruminant livestock will be lost. Conversely, the preservation of these endemic breeds will ensure that these animals continue to provide ecosystem functions (vegetation control, nutrient cycling) that help to maintain the native habitats in which they have co-evolved. Further, the proper management of endemic ruminant livestock herds is believed to represent the most economically beneficial long-term sustainable use of their wooded savanna habitat.

69. Thus, it is in the interest of the global community to identify these critical habitat pockets in the region, and to support measures to protect and conserve these globally and regionally significant breeds and their habitats. Existing national and regional programs do not emphasize *in-situ* conservation of endemic livestock/habitat complexes, or the development of appropriate economic incentives that are essential long term ingredients for ensuring sustainable *in-situ* conservation of endemic livestock. The project, therefore, will remove barriers to the *in-situ* conservation of these critical and unique genetic trait/habitat complexes through such measures as community-based natural resource management, and incentive programs to motivate farmers and herders to

maintain pure endemic breeds in their herds. The project will work with communities at 12 pilot projects sites to increase critical awareness, develop and test resource management strategies, and develop links with the private sector for appropriate economic incentives at the community level for endemic livestock and habitat conservation.

70. In addition, the conservation of domestic animal genetic resources requires strategies and programs beyond those used for the conservation of wild animals, namely the control and optimization of production and reproduction parameters (i.e. domestication) in order to (a) maintain a distinct gene pool and a genetically dynamic population; and (b) enhance the quality and quantity of products (economic, social, environmental) derived from the gene pool. Numerous policy and economic incentives/disincentives and market distortions negatively affect the value given to endemic ruminant livestock by all stakeholders, including policy makers, farmer/herders, and market actors. In the absence of access to markets, farmers/herders will abandon endemic livestock in favor of exotics or other marketable products. Therefore, because conservation of endemic livestock is inexorably linked to their production and marketing, the project will undertake various measures to remove and reorient these production and marketing conditions to better reflect the true economic and ecological value of these breeds.

71. The project is operating in an environment where large-scale change is taking place in landscape management and uses, as governments and individuals respond to evolving incentives for varied crop and livestock production systems, and traditional frameworks for land tenure compete with emerging national laws and policies. The project cannot control these macro-economic forces, but it can affect how these forces are understood and applied in certain landscapes. Thus, the project does not intend to address livestock production alone, but rather to situate activities within the broader context of the crop production sector as well as the animal production sector. The strategy of the project is to make endemic ruminant livestock raising within the sub-region attractive over the long-term, while remaining environmentally and socially sustainable, so that herders are not pushed towards raising exotic breeds or moving towards increased agricultural production. To do so, the project will attempt to preserve existing incentives for conservation and for productive use of endemic breeds, while also creating additional incentives (productivity, market value) and removing economic policies and market distortions which hinder endemic livestock raising. During the course of the project, habitat destruction will only be addressed at the project sites and only in relation to livestock-mediated (or, at a broader level, agriculture-mediated) effects/impacts. However, the project has an inbuilt 'replication framework' to ensure out-scaling and up-scaling (see paragraphs 84-85 and Section 2d of the Project Brief). Although replication can only be in areas and circumstances similar to those prevailing at the project sites, in fact these sites represent a significant percentage of the habitat suitable for endemic breeds in sub-saharan Africa.

Rationale for Experimental Model to Demonstrate Economic Viability of Endemic Breeds

72. The question of the economic viability and competitiveness of endemic ruminant livestock breeds within the sub-region is a critical one, as the project is explicitly designed so that success depends on the willingness, in fact the preference, of livestock herders to retain and/or adopt endemic breeds. The project was proposed and supported by governments and relevant institutions because there does exist already evidence that endemic breeds, in particular the trypanotolerant breeds on which this project is focused, are equally or more productive, in total economic terms (i.e. when both inputs and outputs are considered in a typical tse tse infested environment), as trypanosusceptible breeds. Further, several studies have suggested that the trend

away from trypanotolerant populations is not necessarily due to deliberate decisions by farmers, but rather is their response to forces outside their control (e.g. market and policy distortions and incentives). In addition, studies on the willingness to pay of livestock herders for various breeds have ranked disease resistance higher than productivity, an area in which the endemic breeds are uniformly stronger.

73. Explicit cost-benefit analyses comparing exotic and endemic livestock breeds under various conditions have not been conducted. However, results of previous research conducted within the scope of the African Trypanotolerant Network (ATLN) strongly suggest that trypanotolerant cattle are the solution to the problem of producing cattle in regions of Africa affected by trypanosomosis. For example, the paper of "Itty, P. and Swallow B.M. 1994. The Economics of Trypanotolerant Cattle Production in Region of Origin and Areas of Introduction. In: G.J. Rowlands and A.J. Teale (eds): Towards Increased Use Jointly by ILRAD and ILCA at ILRAD, Nairobi, 26-29 April, 1993" addresses the following question: under what circumstances can trypanotolerant cattle enterprises be economically viable in their regions of origin, and in areas where they are introduced. Ongoing village cattle enterprises in four countries (The Gambia, Ivory Coast, Togo and Zaire) were analyzed using cost-benefit analyses, with the social-level analyses considering the costs and benefits accruing to overall national economies, and the private-level analyses examining the cost and the benefits to individual herd owners. The primary criteria for measuring profitability were the return on capital invested in herd purchases and production improvements. The study concluded that despite differences in production systems in the four countries, the endemic cattle enterprises (using N'dama cattle) generated attractive social-level returns and good to fair private level returns at all sites, with internal rates of return ranging from 18-46% at the social level and 10-26% at the private level. Further, sensitivity analyses showed that these results are robust, i.e., the results are relatively insensitive to changes in exchange rates, beef prices, and the cost of veterinary services and veterinary treatment.

74. Thus, while the project is "experimental" in the scope of its approach, the project design does in fact incorporate strategies based on earlier analyses of the economic viability of endemic livestock raising. Nevertheless, there is a need for detailed cost-benefits analyses for endemic ruminant livestock breeds under varied policy frameworks and in various socio-economic and ecological conditions (in particular the conditions at the project pilot sites), and the project includes explicit plans to undertake these cost-benefit analyses as part of Activity 1.5.1

The GEF Alternative

75. The GEF Alternative will focus on the development of a model for *in-situ* conservation of endangered breeds of West African endemic livestock and protection of their habitats in selected priority pilot sites (GEF increment), with supporting activities on: regional research on genetic diversity of sub-populations (co-financing from donors, ILRI, ITC, and national governments); *in-situ* pure breeding programmes with the participation of farmers in the project's priority sites (ITC, national governments, and some GEF funding to remove barriers); production and productivity improvement programs with the participation of farmers in the project's priority sites (AfDB, ILRI, national governments, private sector); and expanding opportunities for marketing at the national and regional levels (AfDB, national governments, private sector, with some GEF funding where incrementality is established). The model to be tested in this project is not a static model, but will be adapted to each site, and will be revised through an iterative process of adaptive management during the life of the project. Finally, regional cooperation will be enhanced for the coordinated conservation of genetic diversity and the exchange of experiences, most importantly in replicating the model for *in-situ*

conservation of endemic livestock based on the experiences and approaches developed at the project pilot sites and at the national and regional levels (GEF and co-financing).
76. The GEF increment will, in summary, address threats to globally significant endemic ruminant livestock in West Africa, remove barriers to long term sustainable protection and management of these livestock, improve the enabling environment, develop and replicate sustainable use models, and build capacity for continued work in this regard over the long term.

Rationale for a Regional Approach

77. The proposed project is designed to be implemented simultaneously in four neighboring countries (the Gambia, Guinea, Mali, and Senegal) in West Africa. The rationale for a trans-national project within this sub-region, rather than country-specific project(s), is based on several ecological and socio-economic conditions, as well as considerations of effectiveness and efficiency.

78. First, management of habitat and natural resources on the one hand, and animal genetic traits on the other, both require a system boundary that encompasses the natural ecological and socio-economic patterns of endemic ruminant livestock management within the sub-region. Livestock herders and the herds they manage have followed patterns of transhumance in search of adequate rainfall and grazing lands for many centuries. These long-standing seasonal migration patterns are driven by the need to find adequate feed and water resources, regardless of national boundaries or the regulations and control of modern nation-states, most of which do not and cannot prevent these traditions. Further, use of natural resources such as timber and fuelwood, the problem of bushfires, and even land clearance for agricultural settlement, often cross national borders. For example, habitat destruction at the Niamacouta pilot site in Senegal is due primarily to land clearance and to charcoal/timber harvesting, with the latter mostly feeding markets across the border in Gambia where forest protection measures are more stringent.

79. In addition, there is a vibrant though largely informal marketing of livestock and livestock products within the sub-region, and to neighboring countries. While it is true that cross-border markets for endemic breeds are limited, it is precisely the need to expand international marketing opportunities for these breeds that makes a regional project more desirable. In some cases, such as Médina Yoro Foula in Senegal, the poor road infrastructure in country means that farmers/herders in this area already carry out more trade with the Gambia, which is close by, than within Senegal. In fact, the isolation of the site also means that the purchase of veterinary products is done in Gambia, and it is Gambian veterinary technicians who provide veterinary care when needed.

80. Finally, the proposed project is regional in scope because of the limited facilities and expertise within any one country to carry out the project, and because of the synergies that can be achieved through regional cooperation and pooling of resources. For example, one of the key project partners, the International Trypanotolerance Center (ITC), is located in the Gambia but carries out projects throughout the sub-region. In addition, political boundaries within the sub-region were established in the colonial era with no consideration for ecological or sociological factors, so that most ecosystems and cultural groupings are now transboundary, including the movement of livestock herds. As a result, an effective endemic ruminant livestock management and breeding program must be integrated across countries.

Project Site Selection

81. In each of the four participating countries, three primary and two secondary priority pilot sites have been selected. These sites were selected primarily because they are centers of diversity and geographical distribution of pure populations of endemic livestock, and because they are sub-regional biodiversity hotspots for native flora and fauna. In addition to biodiversity factors, the initial criteria for priority pilot site selection included:

- Breed "purity";
- Presence of diversified production systems (involving cattle, sheep and goats);
- State of the natural environment and scope/degree of threats on the ecosystems;
- Level of tsetse challenge;
- Scope/degree of threat on endemic breeds;
- Priority given to (but not exclusive) transboundary sites;
- Participatory confirmation of local community ownership;
- Presence of ongoing projects and baseline activities

82. Using the criteria above during the PDF-B process, the project team was able to identify and select the priority sites within each of the four participating countries. Furthermore, the project team established three broad categories for the project pilot sites, in order to ensure that project field interventions would take place in a variety of settings and thus be more widely replicable throughout the sub-region and elsewhere. These categories are: a) fully sedentary agropastoral; b) sedentary agropastoral and transboundary transhumance; and c) sedentary agropastoral and transboundary transhumance divided along ethnic lines (i.e. one ethnic group engaged in the former activity, and another in the latter). Applying these categories to the selected sites, the project team determined that 11 of the sites fell under category A, 8 under category B, and 1 under category C; of the project primary sites, the relevant numbers were 6 for category A, 5 for category B, and 1 for category C. Based on these categorizations, the project will focus during its first six months on defining generic activities for each category, focusing on land use regulation, community pasture and forest management, and community participation and conflict resolution strategies. See Annex 2J for more details.

83. Another step in defining the project pilot sites was to select sites of a size small enough to be manageable while remaining large enough to be representative of rural communities within the sub-region and to provide significant results valid for replication. The initial step in defining the size of the project pilot sites, completed during the PDF-B process, was to target administrative districts containing at least several communities that have 300-1,000 persons engaged in livestock management within each of the three categories (A, B, and C) noted above. The next step, to be completed during the first six months of the project, is to carry out local level baseline survey that will define specific villages/households of this size as the actual project pilot sites during the project implementation, and to gather data on the ecological and socio-economic characteristics within these sites.

84. One of the key characteristics to be assessed during this initial baseline work is to select production systems/habitats where endemic N'dama cattle productivity is at least somewhat competitive with the productivity of exotic Zebu. As noted in the table below, priority areas for project interventions should fall into categories Production Systems (PS) 2-4. PS 5 areas are unlikely to generate high returns in terms of participation or likelihood of success. On the other hand, in PS 1 areas the immediate need for conservation is less as the threats to endemic breeds are less urgent, although some of the sites will undoubtedly contain non-

degraded habitat, for which conservation measures will be enacted. Within this framework of production systems, the project will focus in particular on changes to production systems driven by unsustainable economic incentives.

Table 1: Breed Strength and Livestock Production Systems/Habitats

Production Systems/Habitats	Relative Strength of Breeds
PS 1 – Non-degraded Forest	N'dama >> Zebu (or other exotic)
PS 2 – Slightly Degraded Forest	N'dama > Zebu
PS 3 – Degraded Forest	N'dama = Zebu
PS 4 – Converted Land with poor conditions	N'dama < Zebu
PS 5 – Converted Land with good conditions	N'dama << Zebu

Project Secondary Sites

85. The PDF-B process identified and undertook characterization of more sites than will be used during the actual project implementation. Thus, in addition to the three primary project pilot sites selected in each participating country, two secondary sites were also selected per country for replication. During the project implementation period, communities at these sites will be the recipients of public education and awareness raising activities regarding endemic ruminant livestock raising and sustainable habitat conservation and management, supported by GEF funding. In addition, as project implementation gets under way, key lessons will be synthesized and used to develop 'extension material'. The project team will present these lessons for discussion - in workshops conducted as part of the project - with responsible government departments in order to identify which lessons can be most effectively scaled up and out. Final decisions on which lessons learned are replicated, and at which sites, will be made by the project's Regional Steering Committee, based on recommendations of the project's Regional Technical Sub-Committee and the National Steering Committees. It is expected that replication at the secondary sites will take place primarily during the last two to three years of the project, in order to allow for successful strategies and best practices to be properly identified and consolidated into usable lessons learned.

86. In order to support the replication of lessons learned at the secondary sites based on activities developed and tested at the primary project sites, government co-financing will be used. This co-financing will take the form of direct in-kind contributions (government resource management staff time and equipment use) that will leverage additional government resources that are part of ongoing government sustainable development programs and projects at each site (the secondary sites were chosen in part based on criteria of existing and project government programs that could be leveraged in this manner). Both the costs of public education and awareness raising, and of finalizing lessons learned in technical workshops and then applying them at the project "secondary sites", have been included in the project budget (see Annex 2O – Project Output Budget).

Project Development Objective

87. The development objective to which the GEF project will contribute is to ensure sustainable populations of targeted endemic ruminant livestock breeds in four West African countries in order to improve rural economies and ensure the conservation of these breeds and their globally unique genetic traits

Project Immediate Objective

88. The immediate objective of the GEF project is to establish effective models for community based management of endemic ruminant livestock and their habitat at project pilot sites, and strengthen production, market, and policy environments in support of these breeds

2biv. Project Activities

89. Outcome 1: Production and productivity of endemic ruminant livestock is sustainably improved

An effective sustainable conservation strategy for endemic livestock breeds must ensure that the target breeds remain viable and functioning parts of the production system. Thus, the project will strive to enhance the productivity of targeted endemic breeds as a means of strengthening food security, increasing producers' incomes, and enhancing incentives for *in-situ* conservation. In the short run, steps will be taken to develop breeding/multiplication herds of the target breeds. The objective of these herds will be to remove the breeds from causes of threat, increase the numbers of breeding females, reduce inbreeding probabilities (thus increasing effective population sizes), and create awareness about the breeds. A further strategy of the project is to improve the quality of performance of endemic ruminant livestock, so that farmers can benefit from increased production without having to increase herd sizes, and thereby avoid overgrazing and other environmental problems. In order to achieve these objectives, the project will pursue six inter-related outputs: 1) characterization of endemic ruminant livestock and their productive environment/system; 2) improve management systems for livestock production and productivity (animal health, nutrition, housing, etc.); 3) establish genetic improvement systems for endemic ruminant livestock; 4) establish systems for dissemination of information on management practices and genetic/breeding systems to farmers, extension workers, and others; 5) identify, demonstrate and disseminate information on incentive systems for farmer participation in endemic livestock raising; and 6) strengthen capacity for participatory community management of livestock production.

Output 1.1: Endemic ruminant livestock and their productive environment/system characterized

1.1.1 Rapid rural appraisal and inventory of livestock management practices and genotypes at each of twelve project pilot sites (including current animal production levels)
1.1.2 Identification, classification and inventory of the genetic structure of each breed (population size and distribution, molecular genetic structure), as well as identification of correlative genetic traits of economic and global biodiversity importance. Work will include sampling and breed surveys, laboratory analysis (50 animals of each species at each of 3 sites in each country; 15 genetic markers), and development of regional distribution maps for both genetically pure and mixed populations
1.1.3 Collect and collate existing information on phenotypes, including local/traditional knowledge, into a database, and conduct targeted surveys to map the phenotype structure of each breed (using existing institutional instruments)
1.1.4 Training, updating and reinforcing capacity of national research institutions to carry out research on endemic ruminant livestock and their environment

Output 1.2: Management systems improved for livestock production and productivity (animal health, nutrition, housing, etc.)

1.2.1 Identify opportunities for improvement (from outputs of 1.1), built upon existing experiences and structures
1.2.2 Test "Best-bet" options through participatory research (linked to improved market development) in collaboration with existing producers' associations
1.2.3 Train endemic livestock producers at pilot sites to apply improved management techniques
1.2.4 Assure regular exchange among project sites at country and sub-regional level on results and lessons learned

Output1.3: Genetic improvement systems for endemic ruminant livestock established

1.3.1 Improve productivity of purebred endemic ruminant livestock through establishment of community/association managed dispersed nucleus breeding herds (built upon existing experiences and structures)
1.3.2 Improve productivity of purebred endemic ruminant livestock through participatory selective breeding at already existing field research stations
1.3.3 Implement measures to manage and control cross-breeding between endemic ruminant livestock and other species (e.g. training and awareness building among farmers and decision-makers)
1.3.4 Strengthen links with existing endemic livestock selection programmes within the sub-region

Output 1.4: Systems established for dissemination of information on management practices and genetic/breeding systems to farmers, extension workers, and others (in coordination with Output 2.3)

1.4.1 Identify partners for development and participation in self-supporting, participatory management and breeding information sharing systems
1.4.2 Work with partners to analyze existing information flows and to establish/strengthen information sharing systems (databases, analytical systems, dissemination systems) at the national and sub-regional levels (using results of activities 1.2.2, 1.3.1, and 1.4.1)
1.4.3 Use information systems to understand management and breeding systems dynamics and trends, perform needs assessments, and identify impact indicators
1.4.4. Develop mechanisms to disseminate critical management and breeding information to relevant stakeholders at local, national and sub-regional level
1.4.5 Monitor the performance of new/strengthened information systems through consultation with participants/end-users

Output 1.5: Information identified, demonstrated and disseminated on incentive systems for farmer participation in endemic livestock raising

1.5.1 Conduct opportunity/constraint analysis of existing and potential incentive systems and economic values of endemic ruminant livestock (Activity 2.1.1), including cost-benefit analyses comparing endemic and exotic livestock raising under varied policy frameworks and in various socio-economic and ecological conditions, with participation of local endemic livestock producers

1.5.2 Demonstrate applicability of project activities to strengthen economic incentives for raising endemic ruminant livestock, including: accurate assessments of the economic value of endemic livestock raising (Output 4.2); improved management and productivity of endemic livestock raising (e.g. Outputs 1.2, 1.3); improved access to markets for dairy and meat products (e.g. Output 2.2), development of new markets for livestock products (e.g. Output 2.1), and increased access to credit from local investment funds to increase productivity (e.g. Output 2.6)
1.5.3 Demonstrate applicability of project activities to strengthen social incentives for raising endemic ruminant livestock, including raising status/social capital of owners through certification, fairs and competitions (e.g. Output 2.2)
1.5.4 Develop security incentives for raising endemic ruminant livestock, through establishment of secure animal identification systems (alpha-numeric tattoos), based on existing programs in Guinea and Senegal
1.5.5 Assess effectiveness, equitability, and socio-economic impacts of demonstration incentive systems, and replicate lessons learned within the sub-region

Output 1.6 Capacity strengthened for participatory community management of livestock production

1.6.1 Identify, strengthen and/or reorient existing village-level endemic livestock producers' associations to promote, manage and selectively breed endemic ruminant livestock herds
1.6.2 Work with existing programs in the sub-region (e.g. PACE/CAPE) to train and equip veterinary assistants in local communities in project pilot zones
1.6.3 Work with existing programs and organizations at the local level to facilitate the increased participation of women's groups in livestock management activities (with focus on milk production, integrated agriculture-livestock manure programs, raising of small ruminants)

90. Outcome 2: Commercialization and marketing systems of endemic ruminant livestock and livestock products are strengthened

Building on the production improvements of Outcome 1, longer term market development strategies will be developed, including the identification of niche and/or alternative markets based on unique traits and/or products, development of regional marketing channels, promotion of breeds (e.g., through certification, fairs, and competitions), improved systems for linking potential buyers with the producers (to replace the now-defunct Livestock Marketing Boards), and micro-finance schemes for livestock producers to finance critical activities such as marketing. The overall objective is to ensure that conservation of endemic ruminant livestock breeds occurs as part of productive activities that improve human livelihoods, and not as an isolated 'hobby'. In order to achieve these objectives, the project will pursue five inter-related outputs: 1) identify marketing opportunities, including niche markets, for livestock, livestock products, and breeding material, in cooperation with livestock producers; 2) develop marketing, distribution and processing infrastructure for endemic ruminant livestock and livestock products; 3) implement a knowledge-management decision support system for market information; 4) identify, develop and support community-based livestock marketing associations; and 5) develop credit schemes for endemic ruminant livestock producers and traders.

Output 2.1: Marketing opportunities identified, including niche markets for livestock, livestock products, and breeding material, in cooperation with endemic livestock producers

2.1.1 Conduct economic analysis of endemic ruminant livestock raising (breeds, traits, functions, services) to strengthen capacities of local, national regional actors to engage in market analysis and relevant information exchange.
2.1.2 Analysis of market structures and channels, including current volume of endemic ruminant livestock and overall livestock markets within sub-region and for export
2.1.3 Identify market opportunities for endemic livestock and livestock products locally, regionally, and globally, including development of new markets for livestock products (e.g. crafts made from hides and horns)
2.1.4 Identify market constraints for endemic livestock and livestock products, and identify market threats

Output 2.2: Marketing, distribution and processing infrastructure developed for endemic ruminant livestock and livestock products

2.2.1 Identify partners for infrastructure design and development
2.2.2 Conduct needs analysis on infrastructure and processes
2.2.3 Support infrastructure establishment (market outlets, transportation, slaughterhouses, and milk processing units) at national and sub-regional level
2.2.4 Implement activities to address market constraints for endemic livestock (see Activity 2.1.4)
2.2.5 Support strengthening of existing systems for control of livestock related diseases resulting from market activities, with public, private, and collective mechanisms/partners
2.2.6 Organize endemic livestock fairs at contests at the project pilot zone and national levels

Output 2.3: A knowledge-management decision support system implemented for market information (coordinated with Output 1.4)

2.3.1 Identify partners for development and participation in market information sharing system
2.3.2 Work with partners to analyze existing information flows and to establish/strengthen information sharing systems (databases, analytical systems, dissemination systems) at the national and sub-regional levels
2.3.3 Use information systems to understand market systems dynamics and trends, perform needs assessment, and identify impact indicators
2.3.4. Develop and implement mechanisms to disseminate critical market information (e.g. Output 2.1) to relevant stakeholders at local, national and sub-regional level
2.3.5 Monitor the performance of new/strengthened information systems through consultation with participants/end-users

Output 2.4: Community-based livestock marketing associations identified, developed and supported

2.4.1 Identify and analyze existing marketing associations with regard to their potential and constraints as project partners
2.4.2 Catalyze where required the formation of new marketing associations
2.4.3 Link with other activities of the project, and with other partner/support institutions, to strengthen existing and new associations through training, credit, networking, promotional activity, and technical support

Output 2.5: Credit schemes developed for endemic ruminant livestock producers and traders

2.5.1 Assess current priorities and existing availability/access to credit (e.g. inputs for productivity increases) and current constraints on access to credit (e.g. unsuitability of short-term credit for livestock production)
2.5.2 Analyze previous and existing credit schemes within the sub-region (in partnership with potential beneficiaries and partners), including existing UNCDF programs in each country (see Section 4 a i for additional details)
2.5.3 Select existing credit partners (public and private) and develop and test credit schemes at project pilot sites and priority market points, possibly including existing UNCDF programs in each country (see Section 4 a i for additional details)
2.5.4 Provide technical support (management, processing) to farmers' associations, market participants, and other credit recipients to enable their participation (with an emphasis on women's participation)

91. Outcome 3: Natural resources in project pilot sites conserved and sustainably managed for the benefit of endemic ruminant livestock, ecosystem services, and human livelihoods

The project will work to ensure that natural resources are used sustainably at the pilot sites through community based land use planning and natural resource management. Natural resource management will include not only sustainable models for pasture land conservation and feed and water resource management, but also broader habitat protection measures that include fire control, protection of forest resources, and recognition of the value of sustainable forest products and ecosystem services (e.g. water catchment/supply; non-timber forest products; fuelwood; biodiversity). The project will also work to change government policies and programs for endemic ruminant livestock habitat management. In order to do this, activities must benefit from the participation and leadership of local populations and authorities and the establishment of locally adapted and adopted regulations on communal use of natural resources, requiring the implementation or the reinforcement of systems of training, education and support of the populations in implementing community management and essential activities for habitat conservation. In order to achieve these objectives, the project will pursue five inter-related outputs: 1) establish systems of measurement and assessment of natural resource use; 2) strengthen capacity of local inhabitants to develop strategies to conserve and manage livestock habitat; 3) develop and implement project site-level landscape management planning processes and institutional structures; 4) recognize and implement locally adapted and supported norms and regulations for the sustainable management of habitat and resources important for livestock production and ecosystem services; 5) develop and test production systems which combine endemic ruminant livestock raising with compatible natural resource uses and/or agricultural production at project pilot sites.

Output 3.1: Systems of measurement and assessment of natural resource use established

3.1.1 Determine critical natural resource indicators with input from local communities, for use in baseline and comparative analysis, as inputs into management plans, and in order to monitor the effectiveness of natural resources management activities and refine management techniques through adaptive management.
3.1.2 Determine project pilot site boundaries, identify and classify ecosystem types, and assess basic socio-economic and natural resource baseline information at each project pilot site (in collaboration with local inhabitants, and building on work carried out during the PDF-B process)
3.1.3 Analyze existing natural resource use patterns and techniques, and recent and ongoing trends in landscape change, particularly those related to endemic livestock (including ecosystem carrying capacities; measurements of change in ecosystem services; and impacts on livelihoods due to landscape/habitat change), as well as others (uncontrolled bushfires)

3.1.4 Collect and analyze quantitative and qualitative data on migration/transhumance patterns and trends (i.e. increases and/or decreases in numbers of herds and numbers of animals, composition of herds involved in terms of breeds, etc), the impact of such trends on endemic livestock populations (e.g. trypanotolerant livestock), existing perceptions of sedentary farmers/herders as well as transhumant herders, and suggestions on ways to resolve possible conflicts

Output 3.2: Capacity of local inhabitants strengthened to develop strategies to conserve and manage livestock habitat

3.2.1 Strengthen analytical, organizational and management skills for sustainable agro-sylvo-pastoral management and endemic livestock conservation among livestock herders, farmers, extension agents
3.2.2 Training and support of local resource users (livestock herders, farmers) in decision making processes and negotiation of agreements with local authorities

Output 3.3: Project site-level landscape management planning processes and institutional structures developed and implemented

3.3.1 Assess existing development and management practices and policies, and with the participation of local communities, harmonize existing local practices and policies based on sustainable resource management
3.3.2 Provide training to community-based resource (agricultural, pastoral, forest) management structures and conservation institutions/associations
3.3.3 Develop and implement community wide resource management frameworks at each project pilot site, including conflict management mechanisms focused on transhumance issues under the aegis of the Site Level Steering Committees (to implement and oversee actions under Output 3.4)

Output 3.4: Locally adapted and supported norms and regulations for the sustainable management of habitat and resources important for livestock production and ecosystem services

3.4.1 Analyze existing communal grazing norms and strengthen and/or develop improved norms for the management of endemic ruminant livestock (e.g. create no-grazing areas to protect critical native habitat; establish grazing areas for endemic ruminant livestock only; establish grazing rotations and other sustainable grazing practices)
3.4.2 Improve management of forest resources (e.g. promote strategies to decrease deforestation through energy saving/substituting devices, alternative fuel sources, and increased wood supply and/or agroforestry production; develop and implement locally adapted regulations on communal use of forest resources, in particular fuelwood use; educate local inhabitants on methods to avoid/minimize bush fires and create operational alert systems for bush fires)
3.4.3 Improve management of forage resources (pasture enrichment for increased biodiversity; improve feed storage infrastructure; educate herders to increase forage collection during rainy season; test improved feed varieties and/or forage additives and disseminate best results to endemic livestock producers, using credit made available through Output 2.6)
3.4.4 Improve management of hydrologic resources (e.g. repair and maintain water storage and distribution infrastructure, including the creation of temporary watering points)
3.4.5 Improve management of soil resources (formalize manure contracts; disseminate techniques for efficient manure use)

3.4.6 Improve management of agricultural lands (promote the use of certified/improved seed for agricultural crops, so as to increase agricultural productivity and lessen the need to expand areas under cultivation; establish and implement controls on the expansion of cultivated lands into critical indigenous habitats)

Output 3.5: Production systems which combine endemic ruminant livestock raising with compatible natural resource uses and/or agricultural production at project pilot sites developed and tested

3.5.1 Assess compatibility of existing natural resource use strategies (see 3.1.3) at project pilot sites with endemic ruminant livestock production
3.5.2 Develop and test combined economic production systems (livestock and agriculture; livestock and forest products) at project pilot sites
3.5.3 Support local communities in the promotion of markets and local consumption of agroforestry and other sustainable forest products

92. Outcome 4: Legal, policy and institutional frameworks established at the local, national, and sub-regional level for *in-situ* conservation of endemic ruminant livestock

The project will undertake the development of decision-support tools to assist in the identification of policy constraints to the conservation and sustainable use of indigenous livestock, and in the development of policies and laws to address the gaps identified. This will include development of new laws and policies supporting ERL conservation, changes to economic and market policies and incentives, strengthened policies and regulations for community resource management (within the context of the larger decentralization processes taking place in each country), assessment and integration of traditional uses and customs for land and livestock management (including transhumance) and for the preservation of biological diversity, addressing broader agricultural policies that favor crop production over livestock and are leading to continuing expansion of agricultural lands at the expense of wooded savannas, development of regulations to monitor and/or control crossbreeding among livestock, and development of cohesive and mutually supporting policies and regulations among the countries of the sub-region. In order to achieve these objectives, the project will pursue four inter-related outputs: 1) harmonization of national and sub-regional policies and laws for conservation, promotion, trade, and management (including land tenure) of endemic ruminant livestock and livestock products; 2) develop and/or strengthen national and sub-regional policies and incentives in support of sustainable resource management related to endemic ruminant livestock; 3) strengthen local capacity to participate in the creation and the application of policies, laws, and regulations for the management of endemic ruminant livestock and their habitat; 4) and develop mechanisms for supporting local decisions and actions.

Output 4.1: National and sub-regional policies and laws harmonized for conservation, promotion, trade, and management (including land tenure) of endemic ruminant livestock and livestock products

4.1.1 Participatory review of existing policies and laws, including stakeholder analysis (relevant interest groups), policy analysis (costs and benefits of existing policies), and identification of policy opportunities and constraints, building on outputs of PDF-B process
4.1.2 Elaborate, revise, test and evaluate policies and laws, at project pilot zone level and national level
4.1.3 Develop regulations and enforcement mechanisms to support revised policy and legal framework

4.1.4 Translate and publish revised policies, laws, and regulations into languages spoken at project pilot zones, and disseminate to local populations
4.1.5 Ongoing participatory review and fine-tuning of policy, legislative, and regulatory changes, and institutional analysis of local stakeholders, at project pilot site, national, and sub-regional levels

Output 4.2: National and sub-regional policies and incentives developed and/or strengthened in support of sustainable resource management related to endemic ruminant livestock

4.2.1 Develop policy/economic decision support tool at sub-regional level to study existing and potential subsidies, incentives/disincentives, and other financial mechanisms related to livestock raising and natural resource management at the project pilot sites
4.2.2 Demonstrate fair valuation of natural ecosystem services and support its use in the decisions of national economic policymakers and local resource users through education and collaboration
4.2.3 Identification of incentive options following demonstration of the economic value of endemic livestock raising; support awareness raising and policy dialogue on incentives at community and national levels; contribute to policy reform in support of appropriate incentives; and implementation and evaluation of incentive options

Output 4.3: Local capacity strengthened to participate in the creation and the application of policies, laws, and regulations for the management of endemic ruminant livestock and their habitat

4.3.1 Conduct local stakeholder analysis and engage relevant interest groups/stakeholders (based on outputs of Activity 4.1.1)
4.3.2 Test/evaluate/adapt mechanisms for developing and implementing actions at the local level (including sustainability)
4.3.3 Develop mechanisms for replicating local-level decision-making processes at other rural communities

Output 4.4: Mechanisms developed for supporting local decisions and actions

4.4.1 Perform function analysis for professional associations, grassroots organizations, and other stakeholders
4.4.2 Strengthen capacity of existing national research and extension centers to provide long-term assistance to associations, organizations, and individual farmers and herders in promoting *in-situ* conservation of endemic ruminant livestock
4.4.3 Test, evaluate and fine-tune best-bet technical services and information delivery systems

93. Outcome 5: A sub-regional system is established for cooperation, information exchange, and coordinated support for the conservation of endemic livestock

The project will develop and implement a system for cooperation, coordination, and information exchanges relevant to endemic livestock, linked to existing regional programs developed by FAO, CORAF, ITC and other international agencies. This system will be developed based on lessons learned at project pilot sites, and the models for *in-situ* conservation of endemic livestock established during the project. Adaptive management based on the lessons learned at the pilot sites will be used in adapting ongoing project activities at the primary sites, and in designing activities at the secondary sites in the later years of the project. In order to achieve these objectives, the project will pursue five inter-related outputs: 1) develop mechanisms for

information sharing and lessons learned among project participants, and for adaptive management based on lessons learned during project implementation; 2) establish and operationalize long-term sub-regional networks for information exchange; formalize mechanisms and agreements for coordination among institutions and associations in the sub-region involved in the management of endemic ruminant livestock; 4) enable replication of selected site level activities (awareness raising/education and lessons learned) from twelve primary project pilot sites to eight secondary project pilot sites; and 5) develop and support uniform processes for a long-term monitoring system for genetic, ecological, entomological, and epidemiological analyses at project pilot sites, based within existing programs/institutions.

Output 5.1: Mechanisms developed for information sharing and lessons learning among project participants, and for adaptive management based on lessons learned during project implementation

5.1.1 Conduct bi-annual national-level joint learning workshops for project staff, local partners from each site, and key stakeholders to share lessons learned and strategies for improvement
5.1.2 Conduct bi-annual sub-regional level joint learning workshops, with two representatives from each national level meeting, as well as regional stakeholders and experts, to review national level workshop outputs, incorporate their recommendations into project planning, and provide synthesized recommendations for dissemination back to national and local partners
5.1.3 Disseminate outputs of national and sub-regional workshops to all stakeholders to enhance capacity building efforts and institutional sustainability, to provide practical lessons learned to the scientific and development communities, and to support awareness building on conservation of endemic livestock
5.1.4 Establish information sharing mechanisms to exchange lessons learned and best practices with UNEP-GEF project "Development and application of decision-support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives"
5.1.5 Organize and disseminate information gathered from the project (lessons learned) into databases and other print and electronic media; use information to support adaptive management as part of the project implementation; and identify “champions” for mainstreaming lessons learned into relevant national and international processes

Output 5.2: Long-term sub-regional networks for information exchange established and operationalized

5.2.1 Establish a sub-regional information-sharing network on endemic ruminant livestock management issues, including producers, breeders, marketers and distributors of endemic ruminant livestock, as well as local, national and regional agencies, research institutions, and conservation groups
5.2.2 Support the development of direct information sharing (electronic networks; databases) among livestock breeders associations, and between them and regional institutions and associations

Output 5.3: Mechanisms and agreements formalized for coordination among institutions and associations in the sub-region involved in the management of endemic ruminant livestock

5.3.1 Conduct studies on existing and potential cooperation and partnership options
5.3.2 Grant formal recognition and legal status to professional organizations of endemic livestock breeders and operators

5.3.3 Carry out consultations & collaboration within the sub-region to identify and agree upon critical priorities for management of endemic livestock and habitats
5.3.4 Formally establish and operationalize a network of all institutions and associations in the sub-region involved in the management of endemic livestock
5.3.5 Facilitate bilateral and multilateral management agreements and cooperative projects among network members

Output 5.4: Enable replication of selected site level activities (awareness raising/education and lessons learned) from twelve primary project pilot sites to eight secondary project pilot sites

5.4.1 Provide public education and awareness raising on project goals, strategies, and ongoing successes for key stakeholders at secondary sites
5.4.2 Carry out assessment of successful site level strategies and best practices at primary project sites, and determine key lessons learned through participatory review by project management structures
5.4.3 Conduct outreach and coordination activities with government agencies, international institutions/donors, and other managers of existing sustainable development programs and projects at secondary pilot sites; explore and formalize mechanisms for applying lessons learned from primary pilot sites
5.4.4 Implement training programs for local communities and field/extension staff in applying lessons learned at secondary pilot sites; and establish ongoing information sharing mechanisms with counterparts at primary pilot sites

Output 5.5: Uniform processes developed and supported for, a long-term monitoring system for genetic, ecological, entomological, and epidemiological analyses at project pilot sites, based within existing programs/institutions

5.5.1 Define genetic, ecological, entomological and epidemiological factors for ongoing monitoring (based on outputs of PDF-B and proposed activities under Outcomes 1-3)
5.5.2 Evaluate existing monitoring and information management systems in order to define the bases of more effective mechanisms
5.5.3 Establish system for ongoing monitoring at project pilot zones (using GIS and other tools)

Project Benchmarks

94. The proposed project will have ten-year duration, in view of the timeframe required to impact and/or monitor changes in livestock breeding, the dynamics of ecosystem function and renewal, participatory community management structures, and the evolution of national and regional markets. The various project components will be prioritized and implemented gradually beginning with those activities that are likely to result in appreciable "leverage" effects. During the first stages of the project implementation, activities will focus on creating enabling environments, building capacity at all levels, establishing baseline information, and initiating activities at the pilot sites. In terms of specific project objectives, priority during this period will be placed primarily on: (i) improving endemic livestock productivity, and initiating selective breeding programs, (ii) experimenting with models to promote endemic livestock *in situ* conservation as well as the preservation of those ecosystems providing livestock habitats, and (iii) establishing incentive systems and market structure changes to ensure optimal promotion/exploitation of endemic livestock. In addition, steps will be taken in the short run to (iv) develop breeding/multiplication herds of the most endangered breeds. The objective of these

herds will be to remove the breeds from causes of threat, increase the numbers of breeding females, and reduce inbreeding probabilities (thus increasing effective population sizes).

95. The implementation of these early activities will create favorable conditions for the success of complementary activities in the later years of the project, including identification of niche and/or alternative markets based on unique traits, development of regional marketing channels and promotion of the breed, development of exchanges of information and genetic material, and the elaboration of a scheme for regional cooperation and exchanges, and replicating activities at project secondary sites. Capitalizing on lessons learned as the project progresses will make it possible to fine-tune strategies (and results) from earlier efforts, identify and cover gaps in the project design, and strengthen the mechanisms aimed at ensuring the sustainability of endemic livestock *in situ* conservation initiatives.

96. Throughout the project, project managers and oversight committees will use adaptive management strategies to fine-tune project goals, strategies and practices. To strengthen the adaptive management approach, specific project implementation benchmarks will be established at the project outset. These benchmarks will reflect both the achievement of stated project goals and the ongoing commitment of project partners over the 10-year course of the project implementation. Achievement of these benchmarks will be considered the critical factor in ongoing GEF support for the project, and will be closely monitored as they are triggered at different dates throughout the project implementation. These benchmarks will be fine tuned during the feasibility analysis of this project after GEF Council approval.

Table 2: Project Benchmark Indicators

Project Outcomes	**Benchmark Indicators**
Project Immediate Objective: Development and implementation of participatory community management of endemic ruminant livestock and their related ecosystems at pilot sites in four countries…	Cross-breeding among and between endemic ruminant breeds and exotic/non-native livestock breeds has declined at the project pilot sites by 20% by end of year 5
	20% reduction in the average number of hectares at each project site transformed each year from habitat that supports endemic ruminant livestock (e.g. open forest) into other habitat (e.g. agricultural land, scrub) by end of year 6
Outcome 1: Production and productivity of endemic ruminant livestock is sustainably improved	At least one dispersed nucleus community-based breeding program is established in each of the four target countries for cattle, and at each of the twelve project sites for sheep and goats; 4 cattle breeding programs, and 12 sheep and goat breeding programs, by end of year 3
Outcome 2: Commercialization and marketing systems of endemic ruminant livestock and livestock products are strengthened	20% increase in the number of endemic ruminant livestock producers accessing credit by the end of year 4
Outcome 3: Natural resources in project pilot sites conserved and sustainably managed for the benefit of endemic ruminant livestock, ecosystem services, and human livelihoods	Farmers/herders at project pilot sites are participating in community-based natural resource management programs promoted by community conservation associations, with 30% participation by end of year 3 and 60% by end of year 6
	At least 1 critical habitat zone at each project pilot site for endemic ruminant livestock identified, demarcated, and conserved under community-based sustainable management structures by end of year 3

Outcome 4: Legal, policy and institutional frameworks established at the local, national, and sub-regional level for *in-situ* conservation of endemic ruminant livestock	Coordination mechanisms for development and implementation of policy and legal frameworks for conservation of animal genetic resources (endemic ruminant livestock) among four countries within the sub-region agreed to and established by end of year 4
	Platforms for stakeholder participation in policy and legal revisions in place and operational at project pilot site and national levels by end of year 2 and at sub-regional level by end of year 3
Outcome 5: A sub-regional system is established for cooperation, information exchange, and coordinated support for the conservation of endemic livestock	Networks for long-term sharing of genetic materials and of information on endemic ruminant livestock conservation, management and production operating and self-supporting by end of year 6 (see Output 5.2 for details)
	Legal status of professional associations (farmers, breeders, traders, etc.) related to endemic ruminant livestock formalized by end of year 3, and coordination and information sharing mechanisms (forums, direct linkages) at national and sub-regional levels established by end of year 5 (see Annex 2A - Logframe Matrix for details)

2bv. Global Environmental Benefits

97. Trypanosomosis is arguably the single most important constraint to animal production in the subhumid and humid zones of Africa. The total loss to agricultural production and social development in areas affected by the tsetse fly (the trypanosomosis vector) is currently estimated at US$50 billion per year. Up to now, vector control has been based on widespread clearing of bush to eliminate the breeding habitats of the tsetse flies, and the use of insecticides to eliminate these vectors. However, these strategies are known to have serious negative impacts on natural ecosystems as they destroy non-target fauna and flora, and leave behind chemical residues that affect human and animal health. Furthermore, all such efforts to date to eradicate the tsetse fly have failed completely. Thus, the option of using trypanotolerant livestock reduces or eliminates the use of chemicals and bush clearing for controlling the vector, contributes positively to balanced ecosystem health, and preserves globally significant animal and plant biodiversity in natural ecosystems. While conservation of wild flora and fauna in the wooded savanna that constitutes the primary habitat for endemic ruminant livestock is not a direct objective of the project and will not be measured during project implementation, protection of this habitat is certain to produce associated benefits for globally significant biodiversity.

98. The global significance of endemic ruminant livestock in West Africa does not rest solely on their resistance to diseases. Animal genetic resources (AnGR) that have evolved in diverse tropical environments represent unique combinations of genes which define not only productive qualities but also adaptive capability. For the endemic ruminant livestock breeds on which this project is focused, other traits are critical contributors to maintaining household incomes and food security throughout large areas of sub-Saharan Africa, and the unique genetic information represented by these traits could benefit low-income farmers and herders throughout the world if it is conserved, identified, and disseminated through selective breeding programs. These important traits include: resilience under adverse climatic and poor resource (feed) conditions; tolerance to high temperatures and humidity; and ability to utilise low-quality (high fibre) diets. Such traits among endemic ruminant livestock populations in West Africa allow these breeds to prosper under varied and often severe conditions (from semi-arid to semi-humid) that are found also in many other low-income countries where rural populations rely heavily on domestic animal resources. Further, these traits are often the only means for achieving sustainable agriculture in low-input production systems, and thus represent a globally significant means for conserving varied natural ecosystems.

2bvi. Incremental Cost Estimate

Incremental Costs Summary

99. The Baseline associated with the project is estimated at US$316,390,000 (a summary of the baseline figures is provided in Annex 2F, and further details in Annex 2M). The GEF Alternative is US$346,478,000. The total Project Cost is US$30,088,000, of which US$10,495,000 is GEF funding (including the PDF-A budget of US$25,000 and the PDF-B budget of US$470,000). These GEF funds have leveraged US$19,590,000, and the ratio of GEF to other financing is 35% to 65%. Costs have been estimated for ten years, the duration of the planned project.

100. The governments of The Gambia, Guinea, Mali, and Senegal each will provide US$850,000 in the form of in-kind co-financing, which will support implementation of activities under all five project outcomes. The International Livestock Research Institute will contribute US$1,070,000 in the form of in-kind co-financing, also in support of all five project outcomes. The International Trypanotolerance Center will contribute US$1,000,000 in the form of in-kind co-financing, specifically for maintenance and running of the cattle and small ruminant Open Nucleus Breeding Scheme in The Gambia and to the N'Dama cattle breeding station at Boke, Guinea.

101. The African Development Bank will contribute US$14,123,000 to the project, in the form of loans to the governments of the four participating countries. Funding from the AfDB will support a wide range of project activities, as noted in the Project Output Budget. Additional details on the uses of AfDB funding will be available after completion of an AfDB field mission in September 2004.

102. GEF funding will be in the amount of US$10,000,000. The program will be operationally linked to achievement of benchmarks as noted in Section 2 b iii, but it will not be phased in terms of GEF allocation. All GEF funds will be secured at the time of Work Program Entry. Operational and actual disbursement of funds by UNDP will be based on achievement of benchmarks that have been identified in the logframe.

Table 3: Incremental Costs Matrix

Output	Cost (US$ Millions)	Domestic Benefit	Global Benefit
Outcome 1: Production and productivity of endemic ruminant livestock is	BASELINE = 89.09	Baseline projects for livestock production focus on cross-breeding, rural infrastructure, and improved processing, with primary goal being food security and export income, and with most government programs and resources devoted to exotic breeds.	

	Alternative = 99.84	Alternative will significantly increase government support for and emphasis on endemic ruminant livestock breeds, and will build on baseline activities by supporting farmers/herders with increased access to credit, capacity strengthening, and creation of producer's association.	Alternative will decrease cross-breeding of endemic breeds by providing alternative production and productivity improvement options, and will develop pasture, feed and water management strategies and participatory management strategies of benefit to livestock herders throughout sub-region and internationally
	Increment = 9.75 Of which: GEF = 3.80 Others = 5.95		
Outcome 2: Commercialization and marketing systems of endemic ruminant livestock and livestock products are strengthened	BASELINE = 8.85	Baseline situation is a steady decline of market structures and support for endemic ruminant livestock, with actions limited to local markets (and almost no export markets at all) dependent on local traders using informal networks with poor price and availability information	
	Alternative = 11.40	Alternative will greatly increase market information, strengthen and diversify market distribution channels, and remove barriers to export of endemic ruminant livestock and livestock products	Livestock herders realize profits from endemic livestock raising that reduce incentives for cross-breeding and increase household incomes, thereby reducing pressure on pastures and other natural resources (i.e. native plants and animals) in livestock habitat
	Increment = 2.55 Of which: GEF = 0 Others =2.55		
Outcome 3: Natural resources in project pilot sites conserved and sustainably managed for the benefit of endemic ruminant livestock, ecosystem services, and human livelihoods	BASELINE = 189.82	Baseline conditions for management of natural resources (soil, water, vegetation) continues to suffer from increasing pressure coupled with declining norms for resource management; baseline policies and programs continue to remain focused either solely on rangeland management of productive landscapes or solely on natural ecosystem conservation in the form of protected areas.	
	Alternative = 203.09	Alternative improves conservation and management of natural resources, to the benefit of local inhabitants; capacity of local inhabitants to manage resources in communal participatory way is increased	Link is established between endemic livestock conservation, improved production techniques for these breeds, and sustainable management of natural ecosystems, providing a model for replication in the sub-region and elsewhere
	Increment = 13.27 Of which: GEF = 3.96 Others = 9.31		

Outcome 4: Legal, policy and institutional frameworks established at the local, national, and sub-regional level for in-situ conservation of endemic ruminant livestock	Baseline = 20.17	Baseline policies, laws and regulations favor exotic breeds that generate higher meat and milk production; legislation remains highly sectoral and rarely takes account of biological diversity, genetic dilution, or ecosystem carrying capacities; lack of consultation in creating laws and regulations, as well as the lack of authority and resources to enforce them; low level of cohesion and coordination among the different countries	
	Alternative = 21.67	Alternative eliminates legal and regulatory gaps that promote inefficient and unsustainable use of resources by governments and local populations both; increases institutional capacities in research and to implement programs at the field level	Alternative aligns legal, policy and institutional frameworks with conservation of animal genetic resources and critical habitats, and increases technical capacity for biodiversity conservation
	Increment = 1.50 Of which: GEF = .86 Others = .64		
Outcome 5: A sub-regional system is established for cooperation, information exchange, and coordinated support for the conservation of endemic livestock	Baseline = 8.46	Baseline information sharing and coordination of livestock policies and pastureland management across national borders is very minimal, and no existing programs or projects address this issue specifically	
	Alternative = 10.98	Alternative will establish formalized linkages between resource management agencies in four participating countries, which will benefit sustainable development planning and objectives	Alternative will allow for coordinated efforts to conserve globally significant endemic ruminant livestock, and will serve as a model for regional cooperation that can be replicated in other locals
	Increment = 2.52 Of which: GEF = 1.38 Others = 1.14		
	Baseline = 316.39		
	Alternative = 346.48		
	PDF Funding = .50		
	Total Project = 29.59 [of which GEF will contribute 10.00 and others 19.59]		

2c. Sustainability (including financial sustainability)

103. In many cases, previous projects for livestock management and conservation in West Africa have not been sustainable over the long-term. In some cases, institutional sustainability has been lacking, often because capacity building and resources have been focused on bureaucracies and/or project implementers rather than on target communities. In such cases, communities have felt very little ownership of project goals or structures, and so have been unwilling to sustain these goals and structures at the end of projects, and uninterested in

pressuring their governments to do so either. In other cases, financial sustainability has been lacking, particularly in the many instances where international projects were implemented without government participation or financial support, and where projects did not create financially self-sustaining mechanisms over the long-term. The proposed project has been designed to avoid these problems through a variety of measures, as noted below. In addition, because the project is to be implemented over ten years, project proponents and partners will have substantial opportunity to test, refine, replicate, and consolidate those project activities and structures that will ensure institutional, social and financial sustainability.

Social and Institutional Sustainability

104. Decentralization and the devolution of real power and authority to regional and especially local authorities and communities is a powerful trend in all four of the target countries, and for many rural communities there is a strong sense of empowerment and opportunity because of this trend, in particular in the area of land use planning and natural resource management. As such, they have provided an excellent opportunity to engage local stakeholders in the design and implementation of the proposed project's activities, to ensure a strong sense of ownership for project actions and goals among them, and to prepare them for the responsibility (and opportunity) of continuing to implement relevant measures after the project has ended. As noted in Section 2 e i below, the project has done a thorough job of meeting with many stakeholders, particularly project pilot site communities, during the PDF-B process.

105. To ensure that local communities are fully able to assume their responsibilities in the implementation of the project, the project design goes beyond a narrow, limited perception of capacity-building issues to take into consideration all of the needs of the grassroots actors, i.e. organizational development, improvement of technical skills, strengthening capacities in the areas of project planning and implementation, fund raising and economic incentives, and monitoring and evaluation. In this process, priority will be granted to the development of institutional analysis capacities, in order to enable existing communal and traditional authorities, territorial collectives, associations of endemic livestock producers and buyers/dealers, and others to define independently the types of support needed to reinforce their intervention capacities as well as the partnership mechanisms to be established. In addition, capacity building and partnership development actions will be extended to independent livestock herders, i.e. those who are not already involved in an organizational system. Where appropriate, the project will also work to enable local structures such as these to collect service fees and manage profitable ventures over the long-term, and in countries where the legal structure does not yet support such activities, the project will work to change the legislative framework as needed. The project also will work to promote modifications at the political and regulatory levels to further those aspects of the decentralization process that address structural constraints at the local level for effective and participatory community management and control of natural resources.

106. In addition to a focus on decentralized mechanisms to sustain the project objectives after the project has ended, there will also be capacity building of established national research and resource management agencies, and their extension services, as well as international research institutions with expertise in livestock management and breeding, and other national and international stakeholders (see Annex 2D for details). The project will train research and extension staff, ensure that resources and access to up-to-date information is adequate, and help to clarify the legal and regulatory roles and responsibilities of these project partners. In addition to direct capacity building, however, the project will also create integrated institutional sustainability by establishing a sub-regional network for information sharing and coordination on conservation and

management of endemic ruminant livestock (activities under Outcome 5). This network will allow project partners to share information and perspectives, co-ordinate and plan activities, mainstream endemic ruminant livestock conservation into national policies and programs. It will also systematize and disseminate lessons learnt to other institutional stakeholders throughout the region capable of replicating them in the future.

Financial Sustainability

107. Over the last few decades, a continued scarcity of funding, due to limited national budgets and dwindling flows of development aid, have demonstrated the necessity of developing effective strategies for the long-term financing of environmental conservation and sustainable development programs. The proposed project has developed a suite of mechanisms for long-term financing, including: strategies to remove constraints and enable effective incentive systems for raising endemic ruminant livestock, including enhanced production and marketing strategies; rural finance mechanisms, including micro-credit and innovative loan guarantees; government support through user fees and taxes and by taking advantage of opportunities related to decentralization trends; and finally, ongoing donor support from committed co-financing entities. In this way, the GEF-supported program will allow activities to continue after the project ends with only modest reliance on direct government subventions and/or new international donor support.

108. In order to remove constraints and enable incentives for *in-situ* conservation of endemic ruminant livestock, the project will remove numerous barriers to production and marketing of these breeds. For example, marketing of endemic ruminant livestock and livestock products in the sub-region is a highly unorganized activity involving disparate and uncoordinated actors. However, tremendous opportunities exist in the local and regional markets for livestock, particularly as consumer demand is steadily increasing throughout the sub-region, if a system linking potential buyers and producers is established. In the past, livestock marketing boards had assumed this role, creating trade opportunities in livestock within countries, within the sub-region, and to other international markets (for example, exporting N'Dama breeding bulls to Nigeria, Ivory Coast, and other countries). With the collapse of the livestock marketing boards, these markets have been reduced significant, and in the case of international markets outside the sub-region, they have disappeared completely. As noted in the project activities section, many other incentives for livestock raising will be developed within the project, such as improved production and creation of added value for endemic ruminant livestock and livestock products on domestic and export markets. By significantly reducing the ongoing costs of raising endemic ruminant livestock, increasing their productivity, improving distribution channels, creating added value products, and enhancing access to new or expanded markets, the project will create sustainable sources of income for livestock herders, buyers and dealers, and other market actors, thereby incentivizing them to maintain these herds throughout the sub-region. In this way, the endemic ruminant livestock industry will become self-sustaining and not require ongoing financial inputs from governments or outside donors.

109. Lack of access to credit and financial resources are important constraints in livestock farming in West Africa. To address this problem, the project will help to develop systems of mutual credit and savings at the local (project pilot site) level which will permit the development of new mechanisms for production and productivity improvements (including breeding improvements) as well as enhanced marketing activities. Project activities to create and/or strengthen livestock production associations, and to educate local inhabitants on basic financial strategies and opportunities, will be one important means of establishing mutual credit and savings mechanisms. The project will also explore the possibility of working with public and private rural

finance entities to place the interest generated by credits and loans accorded to different actors in the project into special accounts to be mobilized to finance interventions after the project. In doing so, the project will investigate the success of past and existing GEF Small Grants programs in Senegal and Mali that are focused on micro-grants. The project will also work closely with the United Nations Capital Development Fund (UNCDF) to 1) map out the different types of financial services (informal, semi-formal and formal) currently available in the four project areas; 2) determine the comparative need for credit delivery versus credit demand at each of the project pilot sites; and 3) conduct local market surveys to assess the needs of farmers/herders for various types of microfinance support (loans, savings, insurance, remittances). The latter point is especially critical as farmers could benefit just as much, if not more, from savings, insurance or remittances than from the more common loan programs, particularly as access to savings services would serve as a buffer and provide an alternative means of smoothing consumption and dealing with economic shocks without depleting existing assets (e.g. livestock).

110. Given the size of the proposed project and the limited resources in the participating countries, the project is not designed to rely on significant government subventions to continue necessary activities after the project has ended. Nevertheless, the project will work specifically to generate technical and financial support that is available in all four participating countries from the structures and organizations directing and managing decentralization processes (for example, in Senegal the National Agency of Investments for Territorial Collectives - ANICT and the National Rural Infrastructure Program – PNIR command significant resources and can be expected to support activities related to conservation of endemic ruminant livestock), in particular actions such as animal health and breeding programs). In addition, because communities at the project pilot sites will execute and take responsibility for many activities themselves, they will be strongly motivated and organized to pressure the relevant agencies to provide support for ongoing activities. The project will also work with governments to develop indirect financial support mechanisms, such as user taxes on transhumance and taxes or royalties for access to water points and for development of infrastructure for water management, commercial markets, and veterinary services. In Senegal, for example, the new Pastoral Code explicitly authorizes such financial mechanisms in order to create the funds necessary to provide communal goods of benefit to all livestock industry participants.

111. Finally, the continuation of project objectives and activities can rely on the ongoing support of international institutions, including project co-financers, with a long-term interest in the conservation of endemic ruminant livestock. For example, the International Trypanotolerant Center (ITC) has a long-term commitment to conserving the target breeds within the sub-region, in particular through its long-term breeding programs. The African Development Bank has invested heavily in the elimination of trypanosomosis throughout Africa, and its efforts in this regard will continue to benefit the cause of endemic ruminant livestock conservation in the sub-region.

2d. Replicability

112. The programme is designed to provide demonstration effects at the local (project pilot site) level by developing and implementing models of community-based management of endemic ruminant livestock and their habitat for replication by other communities within the sub-region, and potentially in other areas throughout Africa with similar ecological and socio-economic conditions. The twelve primary pilot areas have been selected to maximize the replicability of the models developed there. As noted in the section 2 b ii, site

selection was based on a number of factors, including representative ecological and socio-economic conditions, diversified production systems, and internal and frontier sites, which will allow for replication in many sites and conditions. The long timeframe of the proposed project (10 years) will allow lessons and models to be adequately demonstrated and refined over the course of many years, and yet still be disseminated widely during the project implementation period.

113. Replication is expected to be carried out through private sector, civil society and government resources. Lessons learned in the project will be disseminated to technical staff and extension agents working on habitat conservation, livestock production, soil and water resources management, etc. throughout the four participating countries, as well as to the staff of other rural development and conservation projects. Strategies for disseminating lessons learned in order to promote replication will include seminars, workshops and forums on issues related to the goals of the project. In addition, the project will make use of the extensive sub-regional information sharing network to be developed as Outcome 5 of the project, which will link national resource management agencies, research and academic institutions, other development and conservation projects, endemic livestock producers' associations, private market actors, and civil society organizations. Using this network, the project will be able to disseminate information on policy and legal changes, production strategies, market structural changes, and strategies from the project pilot sites for use by these other parties in their own projects and programs. Collaboration with the private sector has particular potential, as the livestock sector within the sub-region is actively seeking ways to meet increasing demand for livestock products while supporting the policy objectives of national governments for sustainable development.

114. Numerous other existing and planned projects will benefit directly from the lessons learned and information sharing mechanisms derived from the proposed project. Among those already identified are a similar project currently being planned for Southern Africa, as well as the GEF-UNEP project "Development and Application of Decision Support Tools to Conserve and Sustainably Use Genetic Diversity of Indigenous Livestock and Wild Relatives" (details on this project are provided in Section 4 a ii). It is also expected that the project will become part of a UNDP-GEF Learning Portfolio for livestock conservation projects, which will allow models from this project to be disseminated to additional potential replication sites. Finally, the project's results are expected to be of value globally for lessons learned in the sustainable management of dryland ecosystems, in particular livestock grazing areas with both sedentary and migratory grazing patterns.

2e. Stakeholder Involvement

2 e i. Stakeholder involvement in project development

115. During the PDF-B program preparation phase, a wide array of stakeholder participation was actively sought through expert consultations, workshops, village meetings, steering committee meetings and other mechanisms at the project site, national and sub-regional levels. Numerous interested parties were involved in the project preparation phase, including livestock herders and farmers, community representatives, NGOs and association representatives, livestock market players, resource management agency representatives, policy makers, researchers, and international donors.

116. At the project site level, intensive direct and group consultations were held with a cross-section of each community to discuss relevant issues pertaining to key objectives of the regional project. Discussions with each community focused on a number of themes, including: the current status of AnGR at each site and the

role of endemic breeds in local economies and food security; the transformation of AnGR habitat; possible solutions for reversing negative trends; strategies for conservation of endemic ruminant livestock and their habitat; and participatory diagnosis of production systems (constraints and opportunities), among others. Local workshops with approximately 50 persons were held at each site, to review and validate documents that summarize conditions at each site; to encourage participation of local actors in project implementation, and to educate locals on *in-situ* conservation on ERL. Key stakeholders consulted at the project site level included: livestock herders, farmers, livestock cooperatives and pastoral associations, national herders organizations, women's groups, local administrators, elected officials, and traditional leaders, NGOs, and technical personnel in livestock, agriculture, water and forest management and in nature protection. In addition, efforts were made at each site to consult with migratory, transborder pastoralist populations and/or their representatives.

117. At the country level, a National Steering Committee (NSC) was instituted in each country and charged with coordinating the elaboration of the project at the national level. The National Steering Committees met to plan activities, review baseline documents and reports, incorporate the views of expert resource persons, and meet with farmers, herders, local collectives and agro-sylvo-pastoral associations. The National Steering Committees also took responsibility for convening the final national workshop, with participants from each project site and various national agencies, to review and approve the national reports completed under the PDF-B.

118. Detailed thematic reports were prepared based on reviews of the literature, assessments of previous studies and programs, and extensive consultations with stakeholders. For each of the four participating countries, studies were conducted by national consultants and supervised by the NSC on the following themes: 1) review of ecosystems and the evolution of production systems; 2) review of the baseline activities in the livestock sub-sector; 3) review of livestock marketing channels; and 4) review of the current status of ruminant genetic resources. During the preparation of these reports, additional stakeholders were consulted, including for example participants in the livestock market (slaughterhouses/butchers, brokers and traders, buyers) through extensive visits to markets, slaughterhouses, and marketing boards/associations. Following on these reports, an overall country report was prepared in each country, incorporating the results of workshops attended by centralized and decentralized livestock raising services, representatives of livestock herders coming from all of the project pilot sites, and local administrators and elected officials.

119. Following the production of these reports, a series of regional workshops were convened by the Regional Steering Committee, using the national reports as the basis for designing the proposed GEF Full Project. Over the course of twelve months, multi-day meetings were held in Banjul, Conakry, Nairobi, and Bamako to develop the logical framework of the project, to develop partnerships for funding and implementation strategies, and to reinforce consensus and mutual trust and understanding regarding the project's goals and the roles of all interested parties. Participants at these workshops including national country coordinators for the PDF-B process (representatives of the national executing agencies), other national resource management agency personnel, GEF operational focal points and UNDP country office personnel from the four countries, and numerous international research , resource management, and donor agencies (including AfDB, FAO, ILRI, ITC, FARA, CIRAD, CIRDES and CSE). The results of these workshops were taken back to the country level by national representatives to be disseminated at national and local levels for review and approval.

2 e ii. Stakeholder involvement in further project development and implementation.

120. At the site level, public participation will be promoted through the formation of local level steering committees in each of the pilot areas, which will include public representatives such as farmers, herders, traditional and elected local leaders, representatives of resource user, production and marketing associations, and others (membership and roles of these committees are detailed Section 2 e i of the Full Project Brief). These community representatives will be joined by local personnel of resource management agencies, livestock and farmer outreach workers, and other technical personnel. These representatives of communities and other stakeholders in the pilot areas also will be invited to participate in the project's national steering committees.

121. For the project site level committees to develop into effective entities, their responsibilities will be gradually increased and broadened as the project progresses, and a dedicated effort to ensuring that adequate capacity is developed will be made to ensure that they will continue to function and develop *post*-project as permanent community resource management entities. The project will therefore support significant training and capacity development for these new bodies. Most critically, it will also support a pilot period of project activity implementation at each site, during which the effectiveness of these entities can be tested, real gaps in design or capacity identified, and remedial action undertaken.

122. An important challenge for the project is to ensure that stakeholder participation, particularly at the site level, is broadly representative and includes traditionally marginalized constituents. For example, a common problem in rural development projects is the tendency of wealthier individual to capture the majority of project resources and attention. However, in the case of endemic ruminant livestock within the sub-region, farmers who opt for larger but less adapted exotic breeds - perhaps for prestige/social standing – are likely to be more wealthy individuals, as these breeds require much higher inputs and the economic risks of raising exotic breeds are higher. Thus, those wishing to participate in the project activities, which are focused on endemic breeds, are in fact more likely to be the poorer farmers/herders, but regardless, individuals within any given project pilot site community can and will opt for raising endemic, exotics, or a combination thereof.

123. During the design phase of the project, the role played by women in different components of livestock production and use (and with different species of livestock) was documented extensively. This information will be used in facilitating composition of different groups/committees at the sites – while taking care to respect gender roles in local communities. The dynamics of groups as they function during the project implementation will be closely monitored to ensure that gender roles and possible conflicts are captured and lessons learnt fed back into refining the project implementation process. The idea is to ensure that practices promoted in the cause of the project are those that find favor with the community; the project team will also point out observations made that need to be communicated to the community to further their own goals in the project. These may include such things as observed success rates by different gender groups in performing given functions - e.g. sales or developing a specific livestock product. Social science input will be required to ensure that there is minimal conflict between promotion of the desired project goals and comfortable gender roles as practiced by the community.

124. Finally, as much information/knowledge as possible regarding livestock and ecosystem management practices in traditional systems will be collected during the implementation of the project. Indigenous/traditional knowledge will be collected with due consideration to free prior informed consent of

knowledge holders for the disclosure or use of that knowledge. Where feasible the project will promote mechanisms to acknowledge holders of indigenous knowledge and share benefits with them where relevant. Also, indigenous knowledge in many cultures/societies is being lost or eroded due to changing lifestyles where it is not being passed from one generation to the next, and the project (perhaps through local NGO partners) will look at ways to promote active teaching and learning of indigenous knowledge within community groups (not only its documentation) and thus prevent against its loss. Indigenous knowledge to be collected will likely include habitat management (land use allocation, grazing patterns, forest management, etc.), animal management (animal health, feeding, herd composition, etc), animal uses/products (including meat, milk, craft products, etc.), and others. The extent to which such information can help contribute to continued profitable and improved use, including commercialization, of the indigenous breeds will be explored. Options which can be promoted/mainstreamed into innovative strategies will be tried at the pilot project sites with a view to their further evaluation and possible inclusion into the 'innovation packages' that will be replicated for future wider use.

125. At the national level, government policy makers, resource managers, researchers, and livestock industry representatives will play an integral role in the project implementation. The strong support of country partners to the project is reflected in the national government commitments for financing and implementation of proposed project activities, and the extent of government agency participation in the financing and implementation of PDF-B phase activities, in particular in collecting and assessing scientific and socio-economic data that has been used to design the full project. The primary mechanism for stakeholder participation at the national level will be the four national steering committees (details in Section 2 e i).

126. Similarly, through the involvement of international partners, it is expected that the interests and experiences of a wide range of key stakeholders from other countries and international agencies will be incorporated, including international institutes focused on livestock research and production. The project will seek to ensure that participation of this wider range of stakeholders is organized to the optimum benefit of animal genetic resources conservation concerns and the interests of the local communities, both at the project pilot sites and throughout the sub-region. Further details on stakeholder involvement in the project implementation are provided in Annex 2D – Public and Institutional Participation Strategy.

2f. Project Implementation and Execution Arrangements

127. The project will be executed by the International Livestock Research Institute (ILRI), which will have overall responsibility for the project and will be responsible for facilitation of operational procedures with UNDP and co-financing sources. In addition, the International Trypanotolerance Center (ITC) will be an official cooperating agency, and together with ILRI will take the lead role in regional coordination of the project implementation. The Resident Representative of UNDP in Mali will be the Principal Project Representative (PPR), and UNDP Mali will support project implementation by maintaining the project budget and supervising project expenditures, by contracting project personnel and subcontractors, and by monitoring the project implementation and achievement of project outputs. These arrangements are indicative and will be finalized during the preparation of the UNDP detailed project implementation document (ProDoc) after the GEF Council's approval of the current brief.

128. The four National Executing Agencies -- Department of Livestock Services (Gambia), Direction Nationale de l'Elevage (Guinea), Direction National de l'Appui au Monde Rurale (Mali), Direction de l'Elevage (Senegal) -- will work in partnership with ILRI and ITC in the execution of the project. ILRI will appoint a Project Regional Coordinator and support staff (Project Implementation Unit) to ensure the smooth execution of the project. The Project Regional Coordinator will be supported in the implementation of the project by identified staff in each of the four national executing agencies. These staff will be responsible for providing technical support and for back-stopping country components as well as for ensuring optimum communication with country partners.

129. Project management and oversight will be carried out at several levels. Administrative and financial issues will be overseen by a Project Tripartite Committee, following normal UNDP procedures (see sections below for more information). Project strategy and the fulfillment of project objectives will be supervised at the regional level by a Regional Steering Committee, itself supported by a Regional Technical Sub-Committee. Similar structures will be established at the national level, with a National Steering Committee and a National Technical Sub-Committee in each country. In addition, activities at each of the twelve project pilot sites will be overseen by Site Level Steering Committees. See Annex 2H – Project Organizational Structure, for further details.

130. As the executing agency, ILRI will insure that its technical expertise and knowledge is available throughout the entire period of the project. An ILRI committee of experts will be established, to include ILRI staff with background in animal breeding, economic and policy analysis, livestock characterization, and environmental impact studies. This four member committee will be meeting at least every six months with the project coordinator, who will be coordinating their input, and every year with the Project Steering Committee, reviewing progress, gaps and needs for technical expertise, training and capacity building. The expert committee will develop and implement work plans detailing ILRI inputs (in-kind support) to the project. Importantly, the same ILRI experts will guide and backstop relevant activities in the four project countries, providing harmonization at the regional level and linkages.

Project Tripartite Committee

131. The Project Tripartite Committee will meet once per year to oversee all administrative, financial, and operational issues pertaining to the project. Committee Membership will be made up of one representative of each of the following institutions:

- UNDP-GEF Regional Coordination Unit
- UNDP Country Offices for Mali, Gambia, Senegal, and Guinea (project implementing agency)
- African Development Bank
- International Livestock Research Institute (project executing agency)
- Ministere de l'Economie et des Finances (Mali)
- Ministry of Finance (Gambia)
- Ministere des Finance (Senegal)
- Ministere des Finance (Guinea)

132. Further details on the functions and responsibilities of the Project Tripartite Committee are provided in Section 2f – Monitoring and Evaluation.

Regional Level Structures

Regional Steering Committee (RSC)

133. The project RSC will convene once per year and will remain in email contact on key issues between meetings. When feasible, some or all members of the RSC will conduct field visits to selected project sites. The main functions of the PRSC will be to: 1) oversee the Project Implementation Unit (staff and consultants) and ongoing activities of project; 2) review progress on project objectives and review of all project progress reports; and 3) provide strategic coordination with other development programs and projects existing in the four target countries. The Chairperson will be appointed by the RSC members, and the RSC's executive secretary will be the Project Regional Coordinator (PRC).

134. Membership in the RSC will include one member from each country and one from each international partner, as follows:

- Project Implementing Agency: UNDP-GEF Regional Coordination Unit and UNDP Country Offices
- Project Executing Agency: ILRI (with ITC as "partner")
- Department of Livestock Services, National Environment Agency (Gambia)
- Direction Nationale de l'Elevage, Secretariat Permanent du Conseil National de l'Environnement (Guinea)
- Direction National de l'Appui au Monde Rurale, Ministere de l'Environnement (Mali)
- Direction de Elevage; Ministere de l'Environnement (Senegal)

Regional Technical Sub-Committee (RTSC)

135. The RTSC will be established at the start of the project to provide overall technical supervision and backstopping throughout the lifetime of the project, supporting both the decision-making of the RSC and the day to day activities of the Project Implementation Unit (PIU) (detailed below). While the National Technical Sub-Committees will also provide technical support and coordination, they will play a less formal role, and it will be the RTSC that most closely ensures the quality of the project's technical components. The RTSC will meet twice a year with project staff, and will submit biannual reports for review by the tripartite committee and the Regional Steering Committee. The RTSC will be responsible for: 1) technical leadership in project design; 2) technical coordination within project (between sites and countries); 3) optimizing and integrating existing local structures for resource management; 4) directing technical advice to site-level staff and committees; 5) review of project performance and technical reports (outputs); 6) technical reporting to donors; and 7) carrying out a mid-term evaluation of project progress.

136. The RTSC will meet at least annually, and as needed to support specific project activities, and will appoint its own Chair and Secretary. The Project Regional Coordinator will attend meetings of the RTSC. The RTSC will have one representative from each country and one from each of the primary participating international organizations, as follows:

- National research and management institutions (e.g. the Research Unit on Genetic Resources of Bamako – Mali; National Research Institute – Gambia ; Institut de Recherche Agronomique – Guinea ; Laboratoire National d'Elevage et de Recherches Vétérinaires/ISRA – Senegal)
- International and sub-regional research and management institutions (ILRI, ITC, CIRAD, FAO, CIRDES, FARA, CORAF, NEPAD, ICRAF Sahel Programme, ICRISAT, West Africa Regional Focal Office for Management of Farm Animal Genetic Research)

National Level Structures

National Steering Committee (NSC)

137. The National Steering Committee in each country will meet twice per year in order to oversee progress on implementation of project objectives and activities at the national level. The NSC will be responsible for: 1) ensuring the mobilization and effective involvement of all national-level actors (institutions and agencies; ongoing and planned programs and projects) as partners in project implementation; 2) promoting dialogue and information-sharing processes at the national level; and 3) defining implementation modalities and coordination mechanisms at the national level.

138. Membership of the NSC in each country will be based on the membership during the PDF-B implementation, with a target size of 12-15 members, and representation of at least the following institutions/agencies:

- UNDP Country Office
- National Executing Agencies
- Ministry of Finance (and/or Development & Planning)
- Ministry of Agriculture (or whichever Ministry has responsibility for livestock management)
- Ministry of Environment
- Project pilot site representatives (1 from each primary and each secondary site)
- Women's associations
- Livestock dealers associations
- Livestock breeders associations
- National conservation and/or sustainable development NGOs
- FAO National Coordinator for Animal Genetic Resources

National Technical Sub-Committee (NTSC)

139. The NTSC in each country will provide technical advice and data for project activities at the national level. The primary role of the committee is to help the national coordinator in periodically reviewing the technical aspects of the project activities, as well as: 1) ensuring the mobilization and effective involvement of all actors in the dialogue and information-sharing process at the national level; and 2) defining implementation modalities and coordination mechanisms. Each committee will meet twice a year with national-level project staff, and will submit biannual reports to the national steering committee.

140. The NTSCs will be composed of scientists and technicians (5-8 persons) whose competence is recognized in the field. The following are indicative lists of potential committee members:

- Agricultural Research Centers
  - Gambia: National Research Institute
  - Guinea: Institut de Recherche Agronomique
  - Mali: Rural Economic Institute
  - Senegal: Laboratoire National de Recherches Vétérinaires/ISRA; Centre de Suivi Ecologique
- Resource Management Institutions/Agencies
  - Gambia: Department of State for Agriculture; Department of Agricultural Services; Department of Forestry; Department of Livestock Services; Department of Parks and Wildlife Management; Department of Fisheries
  - Guinea: National Livestock Direction, and the relevant Livestock Support Centers at the project sites; National Direction for Water and Forests; National Direction for the Environment of the Ministry of Mines, Geology and Environment; Ministry of Scientific Research and Higher Education's National Direction for Scientific Research
  - Mali: Ministry of Environment's National Direction for Nature Conservation; Ministry of Rural Development and Water's National Direction on Rural Infrastructure, National Direction for Rural Assistance (DNAMR); and Directorate General for Regulations and Control (DGRC)
  - Senegal: Directorates of Livestock, Agriculture and Environment, CONGAD, National Council of Rural Concertation (CNCR)
- Academic Institutions (e.g. the University of Conakry - Faculty of Biology and the Higher Institute for Agronomic and Veterinary of Faranah in Guinea)
- Agricultural Industry Institutions and Agencies (e.g. livestock marketing and production agencies and associations)
- Centers of Environmental Monitoring

Project Site Level Structures

Site Level Steering Committee (SLSC)

141. The SLSC at each project pilot site will act as the intermediary between project site staff and local communities. Each SLSC will undertake various tasks to ensure the effective implementation of project activities at the site level, including: 1) priority setting for project activities; 2) coordination between project activities and baseline activities at the site level; 3) technical inputs into project activities; 4) promotion and coordination of community participation in project activities; and 5) monitoring and evaluation. To achieve these objectives, each SLSC will interact at four levels: 1) with the local community/stakeholders; 2) with relevant local projects/programs and technical services; 3) with other SLSCs within the country and sub-region; and 4) with the National Steering Committee.

142. Membership in the SLSC will be targeted at 10-12 members, and will be determined at the outset of the project implementation process, based on the specific conditions of each country and each site. Generally speaking, each SLSC will be comprised of:

- A local project staff representative
- Community administrators and leaders
- Traditional chiefs/leaders
- Local representatives of national institutions/agencies (e.g. Ministries of Agriculture)
- Extension service agents (livestock, agriculture, forestry)
- Local agricultural/livestock association leaders
- Local NGOs

Project Implementation Unit

143. Details on the project staffing will be fine tuned during development of the UNDP Project Document. In the meantime, it has been agreed that all project staff will work within a single Project Implementation Unit (PIU), which will act as the executing arm of the Regional Steering Committee. The indicative list of full-time project staff is as follows:

- Regional Level: 1 Regional Coordinator, 1 Assistant Coordinator, 1 Expert on Information Management and Communications, and 1 Administrative Assistant (account manager and secretary)
- National Level (4 countries): 1 National Coordinator, 1 Administrative/Financial Assistant, 1 Accountant, 1 National Expert on Livestock Production, 1 National Expert on Livestock Commercialization/Marketing, and 1 National Expert on Ecosystem Management
- Primary Pilot Site Level: 1 Site Coordinator, 1 Environmental Conservation & Management Agent, 1 Livestock Commercialization/Marketing Agent, 1 Livestock Production Agent, 2-3 Community Outreach/Animators (with at least 1 focused on outreach to women)
- Secondary Pilot Site Level: Activities at the secondary sites will be managed by the national coordinator, with the support of existing local service institutions/agencies at the sites (livestock production, water and forests, environment, etc.)

2g. Monitoring & Evaluation

Monitoring and Evaluation

144. The importance of participatory monitoring and evaluation cannot be overstated. Capacity and mechanisms for this will be developed during the life of the project to (a) assist in ensuring project success; and (b) build capacity for long term adaptive management at local, national and sub-regional levels. The project monitoring and evaluation process will rely on baseline data gathered during the PDF-B phase, including both ecological and socio-economic data, and will expand this baseline data during the first year of the project in order to provide a basis against which to measure the reduction in threats and/or the impacts of the project.

145. As noted in Section 2 f above, Regional and National project steering committees, as well as their technical sub-committees, will provide guidance and supervision to the implementation of the project. These

committees will review operations and field implementation and assess whether new priorities require a shift in project priorities. At these meetings, assessments of project activity, review of operations conducted, and current activities and their conformity to stated priorities will be undertaken, based on reviews of all relevant internal and external monitoring and evaluation reports. The committees will also ensure that the project management unit applies the findings of the monitoring and evaluation process to ongoing project activities.

146. In each of the four countries, a Monitoring & Evaluation group will be set up within the Project Management Unit, in order to carry out yearly evaluations of the progress accomplished in relation to project objectives as defined in the project work plan, and based on impact and performance indicators outlined in the Project Logical Framework, and additional indicators that will be developed at the Project Inception Workshop. This internal mechanism to monitor and evaluate project activities and impacts will be designed so as to ensure close involvement of the actors concerned in the conduct of the evaluations. These monitoring and evaluation activities will be designed to allow necessary adjustments and feedback to guarantee the success and durability of endemic livestock *in situ* conservation initiatives. At the regional level, the project's internal assessments will be the responsibility of the Regional Technical Sub-Committee, which will have the authority to hire qualified technical expertise as needed.

147. Annual participatory evaluation exercises will be undertaken with key stakeholders, including local communities, NGOs, and partner organizations. The Regional Coordinator will be required to produce an Annual Project Report (APR) designed to obtain the independent views of the main stakeholders of the project on its relevance, performance and likelihood of success. The APR then supports an annual Tripartite Review (TPR) meeting -- the highest policy-level meeting of the parties directly involved in the implementation of a project. The participants are the four governments, UNDP, project management, and other stakeholders. They will consider the progress of the project based on the APR. UNDP will also report the results of this ongoing monitoring and evaluation conducted by UNDP to the GEF Secretariat during the annual Project Implementation Review (PIR). The project will document lessons learned, and make them available to stakeholders over the Internet and through reports disseminated within the project area.

148. During years 2, 5 and 8 of the project implementation period, an independent external evaluation team will be tasked with a systematic review of the technical, financial and institutional performance of the project. These evaluations will review the achievements of the project against specific benchmarks (see Section 2 b iii above), as well as the performance and impact indicators in the project logical framework. Success and failure will be determined in part by monitoring relative changes in the biological, ecological, economic, and social use baseline conditions established at the beginning of the project. Each evaluation of the project also will document lessons learned, identify challenges, and provide recommendations to improve performance. A final evaluation in year 10 will assess the project's overall performance, lessons learned, and provide specific recommendations for sustaining the project's objectives after the implementation period has ended.

149. The involvement of appropriate interest groups and stakeholders is a challenging task and the right balance between establishing new coordinating and governing bodies for the project (e.g. site coordinating committees, livestock herder, breeder and dealer associations, sub-regional information exchanges, etc.) and the use and inclusion of existing institutions, organizations and user groups is a delicate one. The project's progress on this front will be evaluated as part of its periodic monitoring and evaluation exercises. Further details on the monitoring and evaluation process, including a budget outlining types of activities, responsible parties, budget amounts, and timeframes, is provided in Annex 2P.

Lessons Learned:

150. An assessment of potential lessons to be learned from other conservation and development projects within the sub-region was undertaken during the design of the proposed project. In each country, detailed baseline reports were produced, assessing relevant past and current projects in varied thematic areas such as livestock production, livestock breeding, livestock marketing, community-based resource management, transhumance and pastoral management, disease control, sustainable forest management, integrated natural resource management, rural finance, poverty reduction, and others (see Annex 2M – Baseline Information for details). For each thematic area, lessons learned were summarized and then applied directly to design of strategies and activities for the Full Project.

151. The project design process also depended extensively on the expert technical inputs of the four national executing agencies and various international research partners, in particular ILRI and ITC. A number of ongoing activities at ILRI were particularly relevant to this project and experts at ILRI were consulted during the project design phase regarding their programs in: molecular diversity studies of African cattle, sheep and goats; quantification of market opportunities for indigenous livestock and the identification of institutional constraints to commercialisation and marketing in several sub-Saharan African countries; identification and quantification of producer and consumer preference for alternative livestock genotypes, including cost-benefit analyses of alternatives; development of new methods of evaluating intangible (economic) values for breed selection decisions; breed surveys; development of 'domestic animal genetic resources information systems' supported by comprehensive bibliographies; on-farm characterization and breed comparisons of trypanotolerance in cattle; and molecular studies aiming to understand mechanisms of host resistance to trypanosomosis.

152. Two ongoing ILRI projects provided important strategic design information as well as useful comparative bases for the design of the proposed project. One of these, 'Community-based Management of Indigenous Farm Animal Genetic Resources' in three African countries (Ethiopia, Kenya, Benin)", is focused on the development of optimized cattle breeding schemes for indigenous livestock based on the demands and opportunities of poor livestock keepers in East Africa. The second project, which is also a UNDP-GEF project (currently in the PDF-B phase) entitled "Development and Application of Decision-support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives", is focused on the development of decision-support tools to assist in the identification of policy constraints to the conservation and sustainable use of indigenous livestock in Africa and Asia (details on this second project, and mechanisms for sharing information and lessons learned between the two projects, are provided in section 4 a ii below).

153. For many years, a number of research and development projects have been implemented to try to improve the understanding and economic utilization of trypanotolerant livestock, and the proposed project is built in part on lessons learned from these past projects. The justification for these projects has been based on the demonstrated fact that under trypanosome challenge, endemic livestock populations are more productive than others. However, in comparison to the proposed project, most of these past projects were narrowly focused in their analysis of the issues and their proposed interventions, and in many cases, the assumption was that the "problem" of endemic ruminant livestock raising was sufficiently understood (usually very narrowly defined) and did not require careful assessment and experimentation with different alternative strategies. For example, many projects were developed with the specific intent of unraveling the genetic basis of

trypanotolerance, without considering livestock management and marketing or other issues. Also, while some projects tried to promote trypanotolerant livestock breeding and management, these were all based on government ranches/farms rather than in-situ management with local livestock herders. Further, in most cases the "people angle" – the human livelihood dimension - of the problem has been largely ignored, and what was termed 'participation' by farmers was in fact simply post-facto sharing of results and directives.

154. The present project is experimental and is different from previous ones in, at least, the following ways:

- It acknowledges that the problem at hand is not about trypanotolerant livestock alone; it has to do with the larger question of sustainable use of different kinds of livestock, and their habitat, throughout the sub-region. The project will try to understand existing trends in the use of breed resources of the sub-region: the use of purebreds; the use of exotic breeds; the various forms of crossbreeding (e.g. of the endemic breeds of N'Dama cattle, Djallonke sheep, and West African Dwarf goats of the southern belt with their larger counterpart breeds of the north, such as the Zebu cattle and Sahelian breeds of sheep and goats); and the use of different cross-breeding systems and the markets that each genotype attracts.
- The proposed project moves away from government or public sector-led solutions to ones in which livestock herders are the driving force. The project will work with the herder communities to better understand why there is a conflict between their expressed desire to retain adapted indigenous breeds and the observed strong trend in some areas towards crossbreeds. During the PDF-B phase, the project team determined that herders would prefer to keep indigenous breeds if certain conditions prevailed, but that many of these conditions were beyond their control – marketing channels and policies, legal and policy environments, financial incentives, etc. The project will attempt to identify the factors driving herder decisions, understand them, and use the resulting information to design strategies to mitigate undesirable trends in a way that is consistent with the livelihood objectives of the communities involved. This approach is admittedly experimental as it has not been tried in a similar context before.
- The proposed project embraces the concept of sustainable livelihoods and integrates enhanced use of livestock resources, conservation of both the livestock resources and their habitats, and poverty alleviation, through improved production and productivity for endemic breeds, combined with enhanced access to markets, development of new markets, removal of barriers to market access, and removal of economic disincentives and market distortions. The project is innovative and experimental in its focus on livestock markets, and will undertake comprehensive studies of the local, national and regional markets and marketing channels during the early stages of implementation.
- While actions will be at grass-root or community levels, the proposed project has a regional outlook. In addition, it is designed not simply as a livestock project but as a project in which sustainable use of resources (indigenous livestock and associated habitats) is to be addressed in the broader context of economic development. Thus, policies, markets, ecosystem management, participatory animal breeding, etc are all brought together and accounted for. The combination of a regional scope and a multi-sectoral strategy is unique.

155. Looking forward, the monitoring and evaluation components of the project will allow it to use lessons learned during project implementation to apply an iterative and adaptive approach to ongoing project objectives and activities. As a long timeframe (10-year) project, the adaptive management component (in particular activities under Outcome 5) will be crucial in demonstrating achievement of results and in refining

and readjusting project actions throughout the implementation period. In addition, the project will enhance the capacity of local communities and authorities to incorporate monitoring and evaluation techniques for adaptive management, as noted under Outcome 3.

3. FINANCING

3a. Financing Plan

3ai. Final Project Cost (US$)

(Note: More detailed budget information in available in Annex 2M – Project Output Budget)

Table 4: Summary Project Output Budget

Project Outcomes/Outputs	**GEF**	**AfDB**	**ILRI**	**ITC**	**Govts.**	**Total**
Outcome 1: Production and productivity of endemic ruminant livestock is sustainably improved	3,800,000	2,540,000	280,000	1,000,000	2,130,000	**9,750,000**
Outcome 2: Commercialization and marketing systems of endemic ruminant livestock and livestock products are strengthened	0	2,053,000	210,000	0	290,000	**2,553,000**
Outcome 3: Natural resources in project pilot sites conserved and sustainably managed for the benefit of endemic ruminant livestock, ecosystem services, and human livelihoods	3,958,000	8,810,000	140,000	0	360,000	**13,268,000**
Outcome 4: Legal, policy and institutional frameworks established at the local, national, and sub-regional level for *in-situ* conservation of endemic ruminant livestock	857,000	200,000	325,000	0	120,000	**1,502,000**
Outcome 5: A sub-regional system is established for cooperation, information exchange, and coordinated support for the conservation of endemic livestock	1,385,000	520,000	115,000	0	500,000	**2,520,000**
Sub-total	**10,000,000**	**14,123,000**	**1,070,000**	**1,000,000**	**3,400,000**	**29,593,000**
(Block A budget)	25,000	0	0	0	0	25,000
[Block B budget]	470,000	0	0	0	0	470,000
Total	**10,495,000**	**14,123,000**	**1,070,00**	**1,000,000**	**3,400,000**	**30,088,000**

3aii. Confirmation of commitments by co-financiers – provide supporting documentation.

156. Details of co-financing commitments are provided in Annex 2L

3b. Cost-Effectiveness

3 b i. Estimate cost effectiveness, if feasible

157. The project's cost effectiveness is maximized by the substantial co-financing that will be leverage from the African Development Bank, whose US$14 million investment in improved livestock production and

marketing and sustainable natural resource management will be directly influenced by the investment of GEF funds, as well as the US$3.4 million in government co-financing, a significant commitment by the four participating countries. In addition, the project's emphasis on implementing regional information-sharing networks and policy coordination should lead to improved consideration of global environmental values on the part of many other projects, institutions and governments throughout the sub-region and the rest of West Africa. This replication potential is promoted by the choice of the project pilot sites, which represent ecological and socio-economic conditions widely repeated throughout the sub-region. Cost-effectiveness in the project pilot sites will be assured by designing each of the project's activities there as a response to specific conditions, opportunities and threats identified in that site, and by leveraging significant local stakeholder participation and ownership at each of the project pilot sites.

3 b ii. Alternate project approaches considered and discarded

Selection of Endemic Ruminant Livestock Species:

158. During the project design process, it was decided to place the primary focus of the Full Project on three "flagship" endemic ruminant livestock breeds: N'dama cattle, Djallonke sheep, and West African Dwarf goats. Flagship breeds are defined as those whose conservation will have beneficial impacts and replicability for the conservation of all endemic ruminant livestock. As noted above, in addition to their trypanotolerance, these breeds demonstrate globally significant traits (such as hardiness and disease resistance) that ensure their adaptation to a wide variety of ecosystems. As well as being globally significant, these three breeds are also under significant pressure from habitat loss and cross-breeding with non-native breeds. Consideration was given to the inclusion of other breeds that are already in danger of extinction, (for example the Doayo, Bakosi, Bakweri and Kapsiki of Cameroon, the Liberian Dwarf Shorthorn, and the Ghana Muturu and Keteku of Nigeria), but these breeds ultimately were not included for reasons of project manageability, and because of the degree of threat that they face, the substantial increase in geographic scope they represented, and the varied and difficult ecologic and socio-economic conditions of the sites in which they are concentrated (as an alternative, it was proposed that separate urgent action projects should be developed to focus on creating *ex-situ* herds for these breeds).

159. The project design team also considered limiting the project focus to the most well-known and economically important endemic ruminant livestock breed, the N'dama cattle. However, the global significance of all three breeds, as well as concerns for promoting food security and alleviating poverty (small ruminants play an essential role in the economy of the poorest groups; women, youth and small farmers in particular)., led the project to cover not only cattle, but also sheep and goats. In addition, all three breeds are well known to local farmers and well distributed in the project intervention zone, therefore making adoption of new techniques much easier, and providing the project with high visibility and widely replicable success stories for endemic ruminant livestock management.

Selection of Project Pilot Sites

160. During the PDF-B phase, the decision was made to focus project activities in each country at three primary pilot sites, rather than the initial five sites considered in each country. This decision was based on the assessment that successful models for replication would most likely be produced if project resources and actions were focused at fewer sites. Further, because the primary sites selected represent a cross-section of

typical ecological and socio-economic conditions in the sub-region, it is expected that the models developed at the primary sites will still be widely replicable and beneficial to many rural communities and critical ecosystems. More details on the selection process for the project pilot sites are provided above in Section 2 b iii.

Project Duration

161. During the initial project concept phase, project implementation was expected to take place in three phases, with an initial six-year phase during which activities would focus on creating enabling environments, building capacity at all levels, marketing incentives explored, and initiating activities in the pilot sites; a second six-year consolidation phase, where the pilot results of the first phase would be fine-tuned; gaps covered; new issues dealt with; marketing incentives established; and some replication to additional local communities and sites initiated; and a third three-year phase, during which the Governments would take assume complete funding responsibility and would focus on replication on a wider scale.

162. However, it was apparent during the PDF-B design phase that several factors made the strategy of a single phase project more desirable. First, designing a clear and cohesive long-term implementation plan was the optimum way to ensure the long-term commitment of the significant project co-financers (AfDB, ILRI, and ITC), as well as to ensure that government support (co-financing and policy/institutional commitment) was maximized. In addition, because of the long timeframe required for generating impacts in a livestock conservation project, it was agreed that there was little reason to initiate a phased project when so many of the important objectives could not be completed during an initial phase. Among the critical project components requiring the full ten year implementation period are: generating results in selective livestock breeding; development of regional livestock markets; and ecosystem function and renewal in the critical habitat zones for endemic ruminant livestock. In addition, in order to replicate successful activities/models from the primary sites to the secondary sites will require the full ten years of the project implementation period.

163. As with the initial three-phase plan envisioned during the project concept phase, following the end of the project, participating governments, with the expected ongoing support of the African Development Bank, will assume complete funding responsibility for activities to continue to promote project objectives. Among the most important activities expected to continue after the end of the project implementation period are: replication on a wider scale within the sub-region; livestock breeding programs (selective breeding at field research stations and community-managed dispersed nucleus breeding herds); continued capacity building for professional associations/organizations and government technical/outreach services; and regional information networks and exchanges.

4. INSTITUTIONAL COORDINATION & SUPPORT

4a. Core Commitments and Linkages

4 a i. Country/regional/global/sector programs

164. The project will have significant relevance to UNDP's ongoing mandate for poverty alleviation and environmental conservation in West Africa, as expressed in the UNDP Country Cooperation Frameworks for

the four participating countries, as it will focus on finding ways to generate both global benefits of genetic conservation and local benefits for the rural poor on income generation, food security, and natural resource management.

165. UNDP-Gambia does not have a specific environmental focus in its current Country Cooperation Framework, nor any existing projects specifically focused on environment or agro-biodiversity. However, UNDP-Gambia is currently implementing three projects whose goals complement those of the proposed project. These projects are: Support to Decentralization and Local Empowerment Initiative (GAM/98/V01), Fight Against Social and Economic Exclusion – FASE (GAM/00/002), and Rural Water Supply and Sanitation – RWSS (GAM/93/003-GAM/92/C01). The first of these projects is particularly relevant to the project's efforts to empower local communities in sustainably managing endemic ruminant livestock herds.

166. The UNDP-Guinea Country Cooperation Framework for 2002-2006 has two primary objectives: Good Governance and the Fight Against Poverty. Within the second objective, local development and microfinance, including rural credit, are listed together as one of the three primary themes, and these activities are specifically directed to be coordinated and reinforced with environmental and natural resource management considerations. In addition to these two primary objectives, the CCF also lists Environment and People as a cross-cutting theme, with UNDP support focused on integrating environmental protection in community planning and actions and reinforcing biodiversity conservation through support for the Mount Nimba project (see section 4 a ii below). The proposed project supports both the biodiversity conservation and community planning aspects of UNDP's cross-cutting environmental theme, and will also utilize microfinance as a project strategy, with the hope that UNDP Guinea's experience in this area can be leveraged. UNDP-Guinea is also supporting the Local Development Program of Guinea (PDLG), which promotes sustainable and participatory economic development through decentralization, in the Prefecture of Siguiri, one of the secondary sites of the proposed project.

167. UNDP-Mali's Country Cooperation Framework for 2003-2007 includes the following environment-related objectives: reinforcement of decentralized state structures for environmental and natural resource management; natural resource management in arid zones; reinforcement of the capacity of the permanent technical secretary charged with implementation of international conventions; and development of sustainable alternative energy sources for the poor. The proposed project supports the first two of these goals directly. In addition, UNDP-Mali's environment program is committed to using the national Rural Development Scheme (2002-2015), which promotes sustainable use of natural resources in rural areas, as a basis for guiding its activities in the country. Finally, UNDP-Mali is also committed to supporting the country's Strategy for Biological Diversity Matters (May 2001), which notes five program priorities: strengthening of protected areas; sustainable management of resources; strengthening of human capacities to conserve biodiversity; acknowledgement of traditional knowledge and practices for conservation; and preservation of threatened local varieties and domestic animal breeds.

168. UNDP-Senegal's Country Cooperation Framework (2002-2004) has two primary objectives: Good Governance and the Fight Against Poverty. Within these objectives, the goal of new technologies for information and communication is highlighted, which complements the proposed project's emphasis on national and sub-regional information sharing networks. UNDP-Senegal does not have a specific environmental focus in its current Country Cooperation Framework. It is, however, implementing a number of GEF projects related to biodiversity and sustainable land management, as noted in section 4 a ii below.

169. The proposed project will also collaborate with the United Nations Capital Development Fund (UNCDF) with respect to microfinance. The services of UNCDF's Microfinance Unit are specifically tailored to support countries with emerging microfinance sectors by, 1) providing funding in the form of grants and soft loans to build and integrate sustainable microfinance into the broader financial sector; 2) offering technical & policy guidance using UNCDF technical staff and/or external consultants, and 3) disseminating field-based knowledge of sound microfinance principles and practices with UNDP and other key stakeholders. UNCDF has considerable experience and visibility in the microfinance field in West Africa and extensive knowledge of the key stakeholders in the region including donors, practitioners and consultants. Moreover, as LDCs, all four project countries are potential beneficiaries of UNCDF financial support. Investments in microfinance sectors and direct investments in MFIs are managed by a Regional Bureau based in Dakar (Senegal). Also, UNCDF provides technical and policy advice to a number of UNDP country offices in the region through the MicroStart programmes in particular.

170. During its inception and implementation phases the project will leverage UNCDF's experience and portfolio of programmes to developing a coherent microfinance strategy in each of the four countries. As a result microfinance will constitute an effective tool in support of the project objectives. Details of existing UNCDF microfinance programs in Guinea and Senegal are summarized as follows:

171. Gambia: UNCDF does not currently have any local governance or microfinance programmes in the Gambia. However, UNCDF has carried out projects in the country in the past, in particular a Rural Water Supply and Sanitation project to improve rural water supplies and to strengthen national capacity in planning, implementing and supervising water supply programmes, and the Gambia is still included in the UNCDF portfolio and eligible for ongoing support.

172. Guinea: With regard to microfinance, UNCDF's microfinance initiative in Guinea has consisted in the support of the Credit Rural network by the establishment in Moyenne Guinea of ten or so branches integrated in the CRG-SA network. As of 31 December 2003, the initiative had achieved the following results: 10 branches; 5,537 members; loan portfolio outstanding: 360,358 USD. For the network, the following results were also achieved as of 32 December 2003: 97 branches; 122,741 members; 75,502 active borrowers; loan portfolio outstanding: 6,452,821 USD. In addition, UNCDF is strongly involved in decentralization and local governance efforts in Guinea. UNCDF, in partnership with FAO, UNDP and the Government of Guinea, formulated a new rural development programme in 1994 that includes an initiative to empower local governments and communities to identify, deliver and sustain locally-determined investment priorities. In contrast to past, highly-centralized activities, this new approach involves supporting local governments in different regions of the country with their efforts to deliver small-scale rural infrastructure, such as roads and irrigation, and facilities for basic services, such as healthcare and education. The project also provides technical assistance to build the capacity of local government bodies to raise revenue and deliver public goods and services in response to local needs. The programme is expected to provide a sound basis on which the Government of Guinea can develop national policies and procedures for the planning, allocation and management of decentralized services nationwide. Generally speaking, the UNCDF local governance programme in Guinea has encouraged participation at the village level and facilitated consultation between the various rural development partners.

173. Mali: Microfinance is an important element of the UNCDF Mali country programme. In these projects, UNCDF works closely with UNDP, the Malian Ministries of Planning, Rural Development and Decentralization, and many NGOs. However, UNCDF is even more involved in decentralization and local governance issues in the country. UNCDF's local governance programme in Mali, which was launched in 1998, includes several initiatives. One of these is to provide non-sectoral capital funding in partnership with local governments and UNDP to address the policy, capacity and fiscal constraints to poverty alleviation, and to help the Government of Mali to develop and test a range of participatory planning procedures to empower local authorities to meet locally-determined priorities. Another program is an Eco-development Fund designed to contribute to the decentralization process in Mali. The project is expected to provide a sound basis on which the Government can develop national policies and procedures for the planning, allocation and management of decentralized services nationwide. A third project is the the UNCDF Support to Rural Communes in Mopti project, which provides local governments with a financial facility aimed at supporting their funding budgets for rural development and poverty reduction, which include agricultural and livestock production and water management initiatives. Since it began in 2002, the project has earmarked almost US$4.8 million for local governments in Mopti. Finally, UNCDF is testing a pilot action that provides local governments with targeted funds (environmental or green windows) for investments related to the conservation, protection and management of natural resources. The objective of the 'Support to Local Environmental Governance Fund' initiative (Fonds d'Appui à la Gouvernance Environnementale Locale, FAGEL) is to complement the local development fund and focus on environmental investments. For the initial phase, the fund is made available to a limited number of rural communes whose natural resources are particularly threatened and whose environmental problems have severe social and economic impacts.

174. Senegal: With regard to microfinance, at sector level, UNCDF, in collaboration with UNDP and other donors, provides support to the elaboration of a sector policy. This process, which started in November 2003, will end in September 2004 with the validation workshop of this policy and the related strategy. Concerning direct support to institutions, UNCDF is present in Senegal since 1993 in various fields as the financing of SME in the Dakar outskirts and financial support to women' groups in the Kedougou and Tambacounda regions. However, there is only one current microfinance programme. This is the reoriented Kedougou Microfinance Programme for the period 2003 – 2007 for a total amount of CFAF 301,197,683 including a loan fund of CFAF 255,300,000. As of 31 December 2003, the programme had: 6 branches; 679 members; loan portfolio outstanding: 108,134 USD. ACEP has achieved the following results on 31 December 2003: 7 branches; 21,759 members; loan portfolio outstanding: 24,074,645 USD. UNCDF is also supporting decentralization and good local governance in Senegal through two different programmes. The first, called the Local Development Programme in the region of Tambacounda (also referred to as FDL/Kédougou), is located in the southeast of the country. The second and most recent is the Programme to Support Decentralization in Rural Areas (PADMIR), and is located in the central and northwestern provinces. The Tambacounda initiative strengthens national efforts to raise living standards in rural areas by investing in productive and social capital, and through training local administrators and community members in local planning, negotiating, management and decision-making. This US$4.4 million programme integrates the features of two key UNCDF instruments: eco-development and a local development fund. The Kédougou LDF was conceived to improve the protection of non-renewable natural resources - the only productive capital of the local population - through reinforcing community-based and local government institutions that have a role in natural resource management.

4 a ii. GEF activities with potential influence on the proposed project (design and implementation)

175. The project will coordinate with and take into account the existing pipeline and portfolio of relevant GEF projects in the four countries of the sub-region. The following projects have some thematic linkages to the proposed project, and coordination with these projects will take place as needed during the project implementation:

176. Guinea: There are two GEF projects in Guinea with relevance to the proposed project.

(i) UNEP-GEF project "Integrated management of the Fouta Djallon". This Full Project is currently in the PDF-B implementation phase. The project is focused on prevention and mitigation of land and water degradation in the Fouta Djallon highlands area.

(ii) UNDP-GEF project "Conservation of the biodiversity of the Nimba Mountains through integrated and participatory management". This Full Project is in the final stages of completing its PRODOC, and is expected to run for nine years once implementation begins. The project will focus on the protection of the biological diversity of the Nimba Mountains Biosphere Reserve, relying on integrated ecosystem management to harmonize biodiversity conservation with sustainable development, in part by improving agricultural intensification and revenues, including livestock. It is expected that the proposed project could provide appropriate breeding animals for intensive rearing as part of the Nimba Mountains project, which would help to address the problems of insufficient local protein in the diet and increasing pressure on wildlife from hunting because of low domestic animal productivity.

177. Senegal: There are three GEF projects in Senegal with relevance to the proposed project.

(i) UNDP-GEF project "Integrated Ecosystem Management in Four Representative Landscapes of Senegal". This Full Project is under implementation and scheduled to end in mid 2005. The project will promote biodiversity, climate change, and land degradation priorities in four areas of Senegal representing varied ecosystem types and protection classifications: protected areas; newly established CNRs (Community Nature Reserves), and VTs (Village Territories). In the VTs, production systems will be intensified, land use will be rationalized, and food self-sufficiency will be promoted in order to enhance natural resource management and reduce pressure on protected areas. One of the project sites, in the Ferlo region, is primarily pastoral land, where overgrazing is a significant problem. The project design process identified one of the primary causes of overgrazing as a lack of readily available intensification techniques, particularly for small ruminants that are appropriate to the socio-economic and ecological situation, a problem that the models and lessons of the West Africa livestock project can help to address. There may be some overlap between this project and the livestock project in the buffer zone of the Niokolo Koba Park, which borders the Bandafassi area in southern Senegal.

(ii) WB-UNDP-GEF project "Senegal River Basin Water and Environmental Management Project". This Full Project is under implementation in Senegal, Mali, Mauritania, and Guinea, and is scheduled to end in mid 2007. The objective of this project is to provide a participatory strategic environmental framework for the environmentally sustainable development of the Senegal River basin, and to launch a basin-wide cooperative program for transboundary land-water management. The project's focus on sustainable water resource management will provide

important lessons for the West Africa Livestock project's pilot site activities related to water management and conservation. In addition, this project has a strong emphasis on conflict resolutions between pastoralism and agriculture, and should provide important lessons for the livestock project. Conversely, the livestock project will provide valuable lessons for the river basin project's emphasis on participatory approaches for promotion of sustainable transhumance & livestock management practices, one of the Priority Actions (Component 4) of the project. There may be some geographic overlap between this project and the livestock project in the north of Guinea where the Senegal River originates.

(iii) UNDP-GEF project "Biological Diversity Conservation through Participatory Rehabilitation of the Degraded Lands of the Arid and Semi-Arid Transboundary Areas of Mauritania and Senegal". This Full Project is under implementation and scheduled to end in late 2005. The project will focus on preventing and mitigating land degradation in five critical, upland and floodplain ecosystems of the trans-border Senegal River Valley in Senegal and Mauritania. Among the project's goals are the generation of resource-based income and measures to decrease pressures on forest and range resources. In both instances, the project views promoting shifting the emphasis of herders from quantity (herd size) towards quality as a key strategy, as well as the implementation of improved production systems and marketing. In this regard, the West Africa livestock project can provide important models for replication, as well as direct benefits in terms of breed improvements, market structural changes, and increased information access.

178. In addition to projects within the sub-region, the proposed project shares thematic and strategic goals with two additional projects. The first of these is the UNDP/GEF project for "Enabling Sustainable Dryland Management through Mobile Pastoral Custodianship", which specifically aims to study and demonstrate the value and sustainability of pastoral management systems (including transhumance). This "Global Pastoral Programme" will take place in seven countries, including one country within the sub-region (Mali), and is currently under review for PDF-B funding, with the project development phase expected to run from August 2004 to November 2005. While this project is still in the early development stages, it is expected that the project's focus on building an enabling environment for greater recognition of pastoral mobility as a viable productive system, including transhumance, will provide direct benefits to the West Africa livestock project. Specifically, the Global Pastoral Programme will: 1) raise global awareness among the general public of the existence of pastoral production systems, and the benefits/importance of such production systems to nature conservation, cultural heritage, and the livelihoods of nomadic peoples; 2) focus on lifting the key barriers to enabling pastoral custodianship; 3) catalyse coordinated donor action; and 4) disseminate innovative solutions to sustainable land management. Once the Global Pastoral Programme begins its project development phase, precise mechanisms for information sharing and synergistic coordination will be explored more fully.

179. The second important related project under is currently development for execution by ILRI, namely the GEF-UNEP supported project ''Development and Application of Decision Support Tools to Conserve and Sustainably Use Genetic Diversity of Indigenous Livestock and Wild Relatives"[1]. This multi-country project

[1] The primary objective of the project "Development and Application of Decision Support Tools to Conserve and Sustainably Use Genetic Diversity of Indigenous Livestock and Wild Relatives' is the development and testing of tools that can be used in decision-making to support the conservation of indigenous farm animal genetic diversity in the participating countries and other developing nations. The tools will include:

- Computerised analytical frameworks for the assessment of the status of farm animal genetic resources (FAnGR);

(Pakistan, Sri Lanka, Bangladesh and Vietnam) initiated a planned 18-month PDF-B phase in October 2003 (ending in April 2005). It is expected that a GEF Full Project of five years duration will follow-on to the PDF-B process, starting in late 2005 or early 2006.

180. Both the West African and Asian projects will focus on *in-situ* conservation through utilization of the diversity and uniqueness of indigenous livestock genetic resources, and both will strive to improve human livelihoods in agro-pastoral communities. However, conditions in the two regions are different in important respects, and thus the two projects will take varied approaches to implementation in the field. In West Africa, the uniqueness of the diversity and adaptation of indigenous livestock living in the tsetse infested agro-ecological zones is relatively well understood and characterized, allowing for the immediate implementation of *in situ* conservation programs. In Asia and South East Asia, on the other hand, although the region is very rich in indigenous livestock genetic resources, these are often poorly characterized. The large diversity of Asian livestock, and the limited amount of resources available, requires the urgent development, prior to breed conservation programs implementation, of decision-support tools to allow prioritization of breed conservation in order to maximize conservation of genetic diversity and improvement of human livelihood.

181. With their differing approaches to the same issues, the two projects will pursue a number of similar and complementary activities, and the following outputs from the West African project will be of particular relevance for the GEF-ASIA project:

- Output 1.1: Characterize endemic ruminant livestock and their productive environment/system
- Output 1.2: Improve management systems for livestock production and productivity
- Output 1.4: Establish systems for dissemination of information on management practices and genetic/breeding systems to farmers, extension workers, and others
- Output 1.5: Identify, demonstrate and disseminate information on incentive systems for farmer participation in endemic livestock raising
- Output 1.6 Strengthen capacity for participatory community management of livestock production
- Output 2.1: Identify marketing opportunities, including niche markets for livestock, livestock products, and breeding material, in cooperation with endemic livestock producers
- Output 2.3: Implement a knowledge-management decision support system for market information
- Output 2.5: Development of credit schemes for endemic ruminant livestock producers and traders
- Output 3.1: Establish systems of measurement and assessment of natural resource use
- Output 4.1: Harmonize national and sub-regional policies and laws for conservation, promotion, trade, and management (including land tenure) of endemic ruminant livestock and livestock products. (Note: The most relevant is sub-activity 4.1.1 Participatory review of existing policies and laws, including

---

- Methodologies for prioritising breeds/populations for conservation and for optimising allocation of conservation resources to maximise the diversity conserved;
- Frameworks for incorporating human livelihoods into programmes for conservation (and utilization) of FAnGR;
- Models for the design and (cost/benefit) analysis of breeding programmes to mitigate potential negative impacts of exotic breeds on indigenous animal diversity while enhancing potential contribution of the former to human livelihoods; and,
- Frameworks for assessing the impact of policy and market strategies on FAnGR.

Further details maybe be obtained at http://www.bpslv.org

stakeholder analysis (relevant interest groups), policy analysis (costs and benefits of existing policies), and identification of policy opportunities and constraints, building on outputs of PDF-B process).
- Output 4.3: Strengthen local capacity to participate in the creation and the application of policies, laws, and regulations for the management of endemic ruminant livestock and their habitat
- Output 5.1: Develop mechanisms for information sharing and lessons learned among project participants
- Output 5.3: Formalize mechanisms and agreements for coordination among institutions and associations in the sub-region involved in the management of endemic ruminant livestock

182. To ensure synergies and the sharing of lessons learned between the two projects, the following mechanisms for information sharing will be designed into each project:

183. *Information sharing mechanisms:* Protocols, databases, and results of the relevant activities (described above) will be shared between the two projects using various approaches:
- Document Sharing: Hard copies of any relevant documents and publications will exchanged between the national coordinators of each project. The estimated cost for this activity is US$5,000 for each project (mailing costs) for the five years of overlapping period between the two projects.
- Websites: Each project will have a website which will be fully accessible to the National Coordinators of each country in both projects. These websites will contain detailed protocols for activities, progress reports, databases, etc. The establishment and support of these websites is an integral part of the design of each project, and thus project coordination will not incur any additional cost.
- Information Sharing and Coordination Workshops: There will be two joint-project workshops, with the participation of the National Coordinator of each country in the two projects, with the first workshop taking place in 2006 in one of the participating countries of the West Africa project, and the second workshop taking place in 2008 in one of the participating countries of the Asia project. Each workshop will last for two weeks and will include detailed sharing of information on successful strategies and protocols for implementation of project activities, as well as a field trip to one or more of the project pilot field sites. Funds for the first workshop will be provided by the West Africa project, and for the second workshop by the Asia project, with an estimated cost of US$50,000 for each workshop.
- Tele-Conferences: A conference call among the project coordinator and national coordinators of each project will be organized once per year to review progress and exchange information. The estimated cost of this activity for each project is US$2,500.

184. Institutional mechanisms: The International Livestock Research Institute, and more particularly its Animal Genetic Resources (AnGR) program, is the executing agency of both PDF-B projects and is a major co-financing partner in both. The same staff resources are providing technical input and backstopping for both projects, and are members of the steering committees of both projects. Similarly, FAO staff, and more particularly its Genetic Resources Group (Animal Production Services), are members of the steering committee of both projects. The participation of ILRI and FAO staff at steering committee meetings is an integral part of the design of each project, and thus project coordination activities will not incur any additional cost. However, the project coordinator of each project will be invited to attend the steering and technical committee meetings of the other project (approximately one meeting per year), at an extra cost of US$15,000.

185. Training and capacity building mechanisms: Both of the proposed projects will include significant components of training and capacity building. For the most part, these activities will take place at project pilot field sites, and therefore it will be not possible to perform joint training in most instances. However, it is expected that certain training activities will be conducted jointly between the two projects, and a joint training workshop will be organized at ILRI in Nairobi, Kenya, with participants from each country of the two projects. The focus of this workshop will be "Training, updating and reinforcing capacity of national research institutions to carry out research on endemic ruminant livestock and their environment" (corresponding to Activity 1.1.4 of the West Africa project), as well as the standardization of protocols for Activities 1.1.1, 1.1.2, 1.1.3 of the West Africa project. This training is an integral part of the design of each project, and thus project coordination activities will not incur any additional cost.

4b. Consultation, Coordination and Collaboration between IAs, and IAs and EAs, if appropriate

4 b i. How the proposed project relates to activities of other IAs (and relevant EAs) in the country/region

186. The African Development Bank is a critical partner in the implementation of the proposed project. Development of the project strategy has been carried out in consultation with the AfDB, and additional consultations will take place in the period leading up to the project inception (including a substantial AfDB regional mission planned for September 2004), as well as throughout the project implementation period (AfDB will form part of the Project Tripartite Committee. The project design takes account of the AfDB's priorities and strengths, in particular those represented in the AfDB's Strategic Plan 2003-07. In this plan, the AfDB highlights its goal to support the development of national and regional environmental sustainability strategies, as well as selected, free-standing projects to redress high priority environmental problems in the region, such as land and water degradation and desertification. In the area of agriculture, the Strategic Plan identifies three areas in which the AfDB will play a leadership role: a) rural financial services, focused on lines of credit and microfinance; b) rural infrastructure, in view of its importance for poverty reduction through agricultural production and access to social services; and c) land tenure, in view of its impact on poverty reduction through agricultural production. Further, the Strategic Plan identifies improved rural infrastructure as critical for enhancing cross-border trade and facilitating market integration, express objectives of the West Africa Livestock project. A major new focus of this Strategic Plan is the AfDB's Water Initiative, intended to focus Bank resources on improving water use efficiency and productivity, capacity building in water knowledge and governance, and financing water infrastructure. For this reason, the Bank will play a major role in financing the water infrastructure component of the proposed project.

187. The proposed project also complies with the AfDB's national program priorities within the four participating countries. In Senegal, the Bank's operational strategy for the period 2002-2004 highlights poverty reduction by reducing the vulnerability of agricultural activities, rural development and improving the quality of human resources. In the Gambia, the 2002-2004 Bank Group Country Strategy identified environmental degradation as an emerging challenge, and also stressed the need to pursue regional integration initiatives. In Mali, the Bank's intervention strategy for the period 2002-2004 is aimed at poverty reduction through support to agriculture and rural development, development of human resources and support to the fight against HIV/AIDS. (Information on AfDB priorities in Guinea was not available).

188. Although the proposed project will take place in remote and difficult to access zones, these lands are nevertheless the site of other programs and projects supported by international environment and development institutions. As such, the project will have to coordinate with these existing programs and practices to coordinated development and implementation of programs, and to take advantage of the knowledge of local conditions and opportunities retained by these programs. In particular, the project has been designed to fall within the framework and support the goals of two international programs, and by so doing, to collaborate with and share lessons learned with these programs

189. The first of these programs is the FAO Global Strategy for the Management of Farm Animal Genetic Resources, a world-wide initiative for promoting regional networking and coordination among international institutions as well as national research systems and other national centres for the sustainable use of animal genetic resources (including livestock). This program has established a West Africa Regional Focal Point Office in collaboration with CILSS (Inter-State Committtee to Combat Desertification in the Sahel), CORAF (West and Central African Council for Agricultural Research and Development) and others, that is instrumental in supporting national counterparts with capacity building, regional and national data bases on farm animals, and assistance with the development of pilot projects. This office has been consulted during the project design phase and will continue to be a partner during project implementation, along with the FAO National Coordinator for Animal Genetic Resources located in each of the four participating countries.

190. The second programs is the New Partnership for Africa's Development (NEPAD), a continent-wide programs designed to address the most important current challenges facing the African continent, such as escalating poverty levels and underdevelopment. Among the priority action areas under NEPAD is facilitating implementation of a food security and agricultural development program in all sub-regions. NEPAD has also launched a comprehensive Environment Initiative, which has targeted eight sub themes for priority interventions, of which two are most relevant to the West Africa livestock project: 1) Combating Desertification, and 2) Environmental Governance. The NEPAD Action Plan for Desertification includes the following activities related to rangeland management: promoting research and development for the sustainable use of rangelands, including fodder production, animal husbandry and sand dune fixation; promoting decentralization and participation of farmers and pastoralists in the decision-making concerning rangelands; and facilitating livestock movement to markets and reducing barriers in favor of the livestock trade.

191. In addition to traditional environmental objectives, NEPAD's Environment Initiative also identifies combating poverty and contributing to socio-economic development as one of its core \objectives, thereby concretely linking the environment and development goals of NEPAD. To support this objective, NEPAD has launched a Poverty and Environment Program, where three of the identified priorities correspond with actions of the proposed West Africa livestock project: 3) promotion of community based natural resource management; 6) environmental information, education and public awareness; and 7) promoting sustainable agricultural practices through promotion of science and technology.

4 b ii. **Describe planned/agreed coordination, collaboration between IAs in project implementation.**

192. Collaboration with IAs will be in the form of the dissemination of data and lessons learned from the project, as described in section 2 b iv (Outcome 5 of the project).

Annexes to Section 2

(Annexes are numbered "2A" etc. because this document constitutes Section 2 of the unified documentation package – Section 1 is the UNDP PRODOC)

List of Annexes:

Annex 2A: Logical Framework Matrix

Annex 2B: GEF Focal Point Endorsement Letters

Annex 2Ci: STAP review

Annex 2Cii: Response to STAP review

Annex 2D: Public and Institutional Participation Strategy

Annex 2E: Response to GEFSEC and Council comments at work program inclusion

Annex 2F: Incremental Cost Assessment

Annex 2G: Project Workplan

Annex 2H: Project Organizational Structure

Annex 2I: Maps of Project Area and Pilot Sites

Annex 2J: Description of Country Conditions and Project Pilot Sites

Annex 2K: Description of Endemic Ruminant Livestock in West Africa

Annex 2L: Project Conceptual Model (Threats – Root Causes – Interventions)

Annex 2M: Description of Baseline Activities in Each Country

Annex 2N: Co-Financing Letters of Commitment

Annex 2O: Detailed Project Output Budget

Annex 2P: Monitoring and Evaluation Plan

ANNEX 2A - LOGFRAME

Project Objective and Components	Verifiable Indicators	Baseline	Target	Source of Verification	Assumptions
Project Development Objective: The overall project goal is to ensure sustainable populations of targeted endemic ruminant livestock breeds in four West African countries, in order to improve rural economies and to ensure the conservation of these breeds and their globally unique genetic traits	NA	NA	NA	– Project Terminal TPR and independent evaluation reports – Technical/scientific reviews and evaluation reports of genetic and phenotype distribution of endemic ruminant livestock within the sub-region – Independent research and monitoring reports and materials on socio-economic conditions and trends	- Stable economic and political conditions within and between countries in the sub-region, particularly in rural regions, supports rural development and limits migration into vulnerable ecosystems – Natural disasters (floods, droughts, etc) and/or climate change will not have catastrophic impacts on habitats or livestock herds, or cause migration from arid zones to more humid zones
Project Immediate Objective: Establish effective models for community based management of endemic ruminant livestock and their habitat at project pilot sites, and strengthen production, market, and policy environments in support of these breeds	Populations of purebred endemic ruminant livestock herds of the 3 species specified at twelve pilot project sites in four target countries remain at viable levels, with no decline compared with baseline surveys, and sufficiently large to ensure long-term genetic viability	Gambia sites - Cattle: TBD - Sheep: TBD - Goats: TBD Guinea sites - Cattle: 297,947 - Sheep: 55,437 - Goats: 50,993 Mali sites - Cattle: 42,300 - Sheep: 25,300 - Goats: 25,300 Senegal sites	Target is same population levels at end of project	– Project Terminal TPR – Independent technical evaluation of community-based model – Documentation of model's dissemination and replication – Official national policies, laws, and regulations – Institutional agreements within the sub-region	– Government priorities in each country will remain or become more supportive of endemic ruminant livestock production – Government political and institutional leadership will not change frequently or adversely impact project implementation

		- Cattle: 196,100 - Sheep: 129,400 - Goats: 154,200		
	By the end of project, increase of three targeted endemic ruminant livestock breeds (N'Dama cattle, Djallonké sheep, West African Dwarf goat) as a percentage of the total livestock at the project pilot sites	(Note: Baseline data on breed populations will be collected during year 1) Gambia sites - Cattle: TBD - Sheep: TBD - Goats: TBD Guinea sites - Cattle: TBD - Sheep: TBD - Goats: TBD Mali sites - Cattle: 75% - Sheep: 85% - Goats: 85% Senegal sites - Cattle: TBD - Sheep: TBD - Goats: TBD	Target is 15% increase as % of the overall population by end of project	
	By the end of project, community-based models for in-situ conservation of endemic ruminant livestock successfully implemented at 12 project sites	(Note: Baseline data on breed populations will be collected during year 1)	30% participation at each site by end of project	
	Cross-breeding among and between endemic ruminant breeds and exotic/non-native livestock breeds has declined at the project pilot sites	0% participation at project start	20% reduction by end of year 5 and 50% reduction by end of project, compared to project start	
	Reduction in the average number of hectares at each project site transformed each year from habitat that supports endemic ruminant	Baseline data on cross breeding will be obtained during years 1-3 of the project,	20% reduction by end of year 6 and 50% reduction by	

	livestock (e.g. open forest) into other habitat (e.g. agricultural land, scrub) Annual application of GEF "tracking tool" shows increased scores throughout life of project	under Output 1.1 Baseline data on habitat transformation will be obtained during year 1 of the project, under Output 3.1 NA	end of project in yearly rate of transformation, as compared to project start NA		
Outcome 1: **Production and productivity of endemic ruminant livestock is sustainably improved**	Increased production in herds of three targeted species at project pilot sites by end of year 6 as compared to project start: - Milk production per cow increased by 30% - Calf weight per weaned cow per year increased by 10% - Lamb weight per ewe per year increased by 25% - Kid weight per doe per year increased by 25% - Calf, lamb and kids mortality reduced by 25% Genotypic information and local knowledge on major endemic cattle, sheep and goat genotypes and strains, is collected and disseminated to livestock producers in project pilot sites At least one dispersed nucleus community-based breeding program is established in each of the four target countries for cattle, and at each of the twelve project sites for sheep and goats Self-supporting structures for the dissemination of improved management	Baseline data on current levels of production will be obtained during year 1 of the project, under Output 1.1 Information has never been collected 0 breeding programs exist 0 information sharing mechanisms exist at	Targeted increases (as noted) to baseline by end of year 6, as compared to project start Information delivered by end of year 2 4 cattle breeding programs, and 12 sheep and goat breeding programs, by end of year 3 12 local, 4 national, and 1 regional structures for	- Livestock population assessments - Herder's associations reports - Genetic and phenotype surveys and GIS mapping outputs - Community management association reports and meeting minutes - Evaluation report of capacity building/training programs - Surveys (before and after) of local stakeholder capacity, knowledge, and confidence in endemic ruminant livestock production - Reports of existing local and national government extension services engaged in promoting livestock production - Reports of local	- Capacity strengthening and coordination are sufficient to improve government support/extension services that support endemic ruminant livestock production and productivity - Policies of existing local and national extension services relevant to livestock production favor the conservation of endemic ruminant livestock

	techniques and genetic/breeding material for cattle, sheep and goats in place (one at each project pilot site; one at the national level in each country; and at least one regional structure), with the participation of endemic livestock producers at each site	project start; 0% participation at project start	information sharing; with 25% participation by end of year 4, 50% by end of year 7, and 75% by end of year 10	facilitators and descriptions of test activities.	
Outcome 2: **Commercialization and marketing systems of endemic ruminant livestock and livestock products are strengthened**	**Increase in endemic ruminant livestock and livestock products as a percentage of the total volume of commercialized livestock and products within the four target countries** Increase in the overall real value of endemic ruminant livestock and livestock products sold within the four target countries Increase in the overall real value of endemic ruminant livestock and livestock products exported from the four target countries **Increase in the number of endemic ruminant livestock producers accessing credit**	Baseline data on current production share will be obtained during year 1 of the project, under Output 2.1 Baseline data on current market value will be obtained during year 1 of the project, under Output 2.1 Baseline data on current export levels will be obtained during year 1 of the project, under Output 2.1 Baseline data on access to credit will be obtained during year 1 of the project, under Output 2.5	15% increase in share of endemic ruminant livestock by end of project, as compared to project start 20% increase in market value of endemic ruminant livestock by end of project, as compared to project start 10% increase in export levels of endemic ruminant livestock by end of project, as compared with project start 20% increase in users of credit by year 4, and up to 50% increase by year 8	- Independent evaluation reports - Marketing association reports and meeting minutes, with species and breed level data - Evaluation report of capacity building/training programs - Periodic reports of micro-credit loan activities - Surveys (before and after) of local stakeholder capacity, knowledge, and confidence in endemic ruminant livestock marketing - Surveys of public awareness of endemic ruminant livestock products	- Systems to prevent/control disease outbreaks prove effective as livestock distribution infrastructure scales up - Supra-regional competition in livestock markets remains stable, as does market access to countries outside the sub-region
Outcome 3: **Natural resources**	Farmers/herders at project pilot sites are participating in community-based natural	0% participation at project start	30% participation by end of year 3;	- Community conservation association	- Community advocates effectively

in project pilot sites conserved and sustainably managed for the benefit of endemic ruminant livestock, ecosystem services, and human livelihoods	resource management programs promoted by community conservation associations Increase in value of production of sustainable forest-based products (agro-forestry, medicinal, etc.) at project pilot sites Number of uncontrolled bushfires at twelve project pilot sites declines Critical habitat zones at each project pilot site for endemic ruminant livestock identified, demarcated, and conserved under community-based sustainable management structures Most-intensively utilized grazing lands identified and ecological impacts of grazing documented Farmers/ herders avoid grazing livestock in critical habitat zones identified by project	 Baseline data on value of products will be obtained during years 1-2 of the project, under Output 3.5 Baseline data on bushfires will be obtained during years 1-5 of the project, under Output 3.1 0 critical habitat zones exist at project start No reports exist on grazing land use or impacts 0% of farmers restricting livestock grazing in critical zones	60% by end of year 6 20% increase in product value by end of year 7, as compared to project start 50% decrease in fires during years 6-10, as compared to annual average of years 1-5 At least 1 critical habitat zone established at each project pilot site by end of year 3 Reports completed and disseminated by end of year 1 80% of farmers/ herders restricting livestock grazing by end of year 5	reports and meeting minutes - Evaluation report of capacity building/training programs - Surveys (before and after) of local stakeholder capacity, knowledge, and confidence in endemic ruminant livestock resource management and habitat conservation - Surveys and GIS mapping of ecosystem conditions and changes - Review and Evaluation report on economic incentives	lobby authorities to support decentralization of natural resources management - Community-based resource management and control will limit expansion of mining activities at certain project pilot sites - Community-based resource management and control will prevent uncontrolled or poorly planned road and dam construction at project pilot sites - Existing government authorities (forest and water management, agricultural extension, municipalities) support project pilot sites objectives

Outcome 4: Legal, policy and institutional frameworks established at the local, national, and sub-regional level for in-situ conservation of endemic ruminant livestock	Coordination mechanisms for development and implementation of policy and legal frameworks for conservation of animal genetic resources (endemic ruminant livestock) among four countries within the sub-region Animal genetic information conservation strategies developed by the project are included in the resource management plans of site and national level institutions Decision support tools and systems that integrate information and experiences implemented at local, national and regional levels Platforms for stakeholder participation in policy and legal revisions (Site Level Steering Committees and other mechanisms) in place and operational at project pilot site, national and sub-regional levels Technical services/support delivery systems to enable community participation actively operating at each site	No coordination mechanisms exist at project start No genetic information conservation strategies exist at project start No decision support tools exist today No platforms for stakeholder participation in place at project start No systems for community participation at pilot sites at project start	Coordination mechanisms agreed to and established by end of year 4 Strategies developed and incorporated by end of year 8 Decision support tools in place by end of year 5 Platforms operational at pilot site and national levels by end of year 2, and at sub-regional level by end of year 3 At least one system operational at each site by end of year 3	– Project site committees and project national committees reports and meeting minutes – Evaluation report of capacity building/training programs – Official documents on institutional reorganizations – Published laws and regulations	– Awareness raising and advocacy will ensure enactment of a legal framework regarding endemic ruminant livestock management in a timely and widely supported manner – Sub-regional institutional and policy framework for endemic ruminant livestock will preclude adoption of tariff and non-tariff barriers hindering endemic ruminant livestock exports – Sub-regional institutional and policy framework for endemic ruminant livestock will preclude adoption of subsidies and incentives for non-endemic livestock production, livestock cross-breeding, and/or land clearance for agriculture
Outcome 5: A sub-regional system is established for cooperation, information exchange, and coordinated support for the conservation of	Networks for long-term sharing of genetic materials and of information on endemic ruminant livestock conservation, management and production, with the participation of all significant and relevant research, extension, and management agencies and institutions and market participants in the sub-region, operating and self-supporting	No networks for information sharing exist at project start	Network established and operational by end of year 6	– Legal documents recognizing professional associations – Formal documents for establishment and long-term funding of information sharing networks – Formal documents for establishment and long-	– Regional coordination and information sharing will support the continued existence and effectiveness of regional organizations that harmonize regional policies (e.g. ECOWAS, UEMOA)

endemic livestock	Legal status of professional associations (farmers, breeders, traders, etc.) related to endemic ruminant livestock formalized, and coordination and information sharing mechanisms (forums, direct linkages) at national and sub-regional levels established* Long-term monitoring system at project pilot sites for genetic, ecological, entomological, and epidemiological analyses related to endemic ruminant livestock established	No legal standing for stakeholder associations, and no coordination mechanisms, at project start No monitoring systems in place at project start	Legal status of associations formalized by end of year 3; and coordination mechanisms established by end of year 5 Monitoring system established by end of project	term funding of monitoring system	– Research priorities for endemic ruminant livestock will reflect the global concern for in-situ conservation

* At least one farmer association and one trader association for each target species will be established in each country; in some cases it may be necessary, because of distance and/or organizational complexities, to establish multiple associations in each country. Indeed, it may be more effective to establish multiple associations for each species, e.g. one at each study site where group dynamics will be strong due to common activities and goals. Decisions on the precise structures will be made during year 1 of the project, based on lessons learnt as field activities get under way. It is envisaged that the national level associations will form the basis for associations involving multiple countries to facilitate information sharing - both by producers and traders.

ANNEX 2B: GEF Focal Point Endorsement Letters

See attached file for signed letters.

ANNEX 2Ci: STAP Review

Project Number:	**PIMS 1119**
Countries	**Gambia, Guinea, Mali and Senegal:**
Project Title:	***In situ* conservation of endemic ruminant livestock in West Africa**
STAP Reviewer:	Dr. J. Michael Halderman, Independent Consultant, Berkeley, CA
Date:	June 21, 2004

Key Issues

1) Scientific and technical soundness of the project.

The project has been carefully and thoroughly designed following sound technical and scientific principles. The overall project goal is to ensure sustainable populations of targeted endemic ruminant livestock breeds (N'dama cattle, Djallonke sheep, and the West African dwarf goat) in four West African countries in order to improve rural economies and to ensure the conservation of these breeds and their genetic traits.

Specific measures will be taken to ensure technical and scientific soundness throughout the life of this project. A four person expert committee from ILRI, the executing agency, will guide and backstop relevant activities and provide harmonization at the regional level. There will be one regional and four national technical sub-committees. The combination of these committees and the project's adaptive management approach should enable the project to maintain high technical and scientific standards.

The Project Brief and Annexes identify five outcomes and provide benchmark indicators (the latter will be fine tuned during the feasibility analysis after Council approval). The outcomes and indicators are appropriate, as is the 10 year time period for a project that takes on such a difficult challenge. Particularly relevant to the success of this project is Outcome 4: the establishment of legal, policy and institutional frameworks at the local, national and sub-regional level for *in situ* conservation of endemic ruminant livestock. The proposed monitoring and evaluation system is appropriate and will play a critical role in providing the information necessary for adaptive management.

2) Identification of the global environmental benefits and/or drawbacks of the project.

The project aims to conserve the globally unique genetic traits, and habitats, of the identified breeds of endemic ruminant livestock in the four West African countries. The N'dama cattle are the only breed remaining from an independent center of African domestication. These cattle, as well as the endemic breeds of sheep and goats targeted under the project, are resistant to a number of diseases, the most important being trypanosomosis. The use of trypano-tolerant livestock to reduce trypanosomosis in Africa and elsewhere would have a number of environmental benefits. The endemic ruminants are resilient under adverse climatic conditions, tolerate high temperature and humidity, and are able to utilize low quality diets. These traits are important for household food security and income. These endemic livestock face an uncertain future as a result of habitat destruction and high rates of cross-breeding with exotic breeds (zebu in particular).

Conservation is to be done *in situ* through field-level interventions and the establishment of effective models for community based management in 12 primary pilot sites (three sites each in the four countries) as well as eight secondary sites for replication of selected activities. The strengthening of production,

marketing and the legal and policy environment will also be undertaken. The conservation of these endemic livestock is intended to contribute directly to the protection of their habitats.

The associated baseline financing in the four West African countries is very large: US$ 316 million. This baseline includes projects and activities concerning livestock production and marketing, natural resource management, policies and regulations, information sharing and coordination. The GEF's US$ 10 million under the present project leverages another US$ 19.5 million for a total project cost of US$ 30 million. The activities carried out under the present project are important complements to those of the baseline and deserve GEF funding.

Strengthening the commercialization and marketing systems of endemic ruminant livestock and their products is an essential step in the conservation of endemic breeds. However, it might prove difficult to provide the level of opportunities and services described in the project documents to producers of endemic livestock. If the project is successful in this regard, those assisted by the GEF project will have better services and opportunities than those available to most poor livestock producers in the sub-region. If this situation occurs and is successfully dealt with, the project might become a kind of pilot exercise (even model) in the region for combined livestock development, poverty reduction and environmental conservation. On the other hand, there is the risk that certain project services might be co-opted or misused by those involved in the production and marketing of exotic (particularly zebu) livestock.

3) Project fit within the context of GEF goals, operational strategies, programme priorities, Council guidance and relevant conventions.

The project fits well with the relevant goals, strategies, etc., particularly the CBD, OP#13 (agricultural biodiversity) and OP#15 (sustainable land management). It also fits with the GEF's strategic priority to mainstream biodiversity in production sectors and landscapes.

4) Regional context.

The project covers four neighboring countries in the sub-region for sound reasons. The use of natural resources by herders and others, and the marketing of livestock, often does not correspond with international boundaries. The project document points out that a key reason for the regional scope of the project is the limited facilities and expertise within any one country, and because of the synergies possible through regional cooperation and pooling of resources. The project has a regional steering committee and a regional technical sub-committee.

5) Replicability of the project.

The project has been designed to promote replicability and the approach seems solid. A key objective is to develop models at the 12 project pilot sites of community based management of endemic ruminant livestock and their habitat that can be replicated by other communities within the four countries covered and, potentially, in other areas of Africa. The criteria for site selection included representative ecological and socioeconomic conditions, as well as diversified production systems. The 10 year project period is anticipated to provide adequate time to refine and demonstrate the models. There are a variety of strategies to disseminate the lessons learned to promote replication. These efforts should be assisted by the sub-regional information sharing network to be developed by the project. This network will systematize and disseminate lessons learned to other institutional stakeholders throughout the region capable of replicating these lessons in the future. If the project is successful in developing appropriate and effective models, there should be considerable scope to replicate these approaches.

6) (Anticipated Effectiveness and) Sustainability of the project.

The project has been carefully designed to achieve social, institutional and financial sustainability. The devolution of power and authority in the sub-region to regional and local authorities under decentralization provides a real opportunity for local communities to be deeply involved in the project and gain a sense of ownership. The project aims to carry out extensive capacity building activities (see point 11 below) to support local communities to take advantage of the opportunities and discharge their responsibilities in regard to land use planning and natural resource management. Equally important, the project will work to promote changes at the political and regulatory levels to promote community control and management of natural resources. Capacity building will also be carried out at national research and research management agencies, and their extension services, as well as relevant international research institutions. The sub-regional information sharing network discussed above is intended to support institutional sustainability.

The project's approach to achieving financial sustainability is based on removing constraints and providing incentive systems for raising endemic ruminant livestock that include production and marketing strategies, micro-credit and innovative loan guarantees. The goal is for the endemic ruminant livestock industry to become self-sustaining. It is anticipated that there will be on-going support from some international institutions, notably the African Development Bank and the International Trypanotolerant Center.

While the project's approach is appropriate, some of the assumptions presented in the logframe (Annex 2A) may be optimistic. Examples include assumptions: concerning livestock exports (outcomes 2 and 4), the effectiveness of community advocates' lobbying regarding decentralization and a legal framework (outcomes 3 and 4), and no subsidies or incentives for non-endemic livestock.

This reviewer fully supports the present project, but it needs to be recognized that the project faces a stiff challenge in achieving its objectives. The main reason is that endemic ruminant livestock are not highly regarded in the sub-region by many (perhaps most) policy-makers, officials, farmers, herders and livestock traders. Livestock owners view endemic breeds as inferior in terms of productivity (milk, meat), marketing opportunities and draught power. For these reasons, they cross-breed their animals in an effort to increase productivity and strength, or they switch to exotic breeds. For these reasons, the project is swimming against the currents of change that have been going on for many decades. Project designers are well aware of these problems and present them clearly in the documents. They argue that there is a

limited understanding of the advantages of endemic breeds, and they have designed the project to overcome these perceptions. However, the widespread view that the endemic breeds are inferior to cross-breeds and exotics may well make it difficult for the project to gain and maintain support among various stakeholders – and this, in turn, could make it difficult for the project to realize its goals and become sustainable. Much will depend on the quality of the individuals recruited by the project and of the approach taken to deal with these problems.

Secondary Issues

7) Linkages to other focal areas.

The project is primarily concerned with agro-biodiversity (OP 13) and is relevant to the cross-cutting theme of land degradation.

8) Linkages to other programmes and action plans.

The project is consistent with the four countries' strategies and action plans for the implementation of the CBD and to reduce poverty. It is relevant to UNDP's mandate for poverty alleviation and environmental conservation in West Africa, as discussed in the UNDP Country Cooperation Frameworks with the four countries. The project will coordinate with the existing, and proposed, relevant GEF projects in the sub-region.

Of particular significance, the project will be closely linked with the GEF-UNEP supported project *"Development and Application of Decision Support Tools to Conserve and Sustainably Use Genetic Diversity of Indigenous Livestock and Wild Relatives"* to be carried out in Bangladesh, Pakistan, Sri Lanka and Vietnam (anticipated to start in late 2005 or early 2006). Both projects will focus on *in situ* conservation but will take different approaches to the same issues. It is anticipated that many outputs of the present project will be of particular relevance to the Asia project, and mechanisms for information sharing will be designed into each project.

The West Africa project being reviewed here has been designed to be within the framework of and to support the goals of two international programs, and to collaborate with and share lessons learned with these two programs: (1) the FAO Global Strategy for the Management of Farm Animal Genetic Resources, and (2) the New Partnership for Africa's Development (NEPAD).

9) Other beneficial or damaging environmental effects.

The project intends to produce local, regional and global environmental benefits resulting from the conservation of targeted ruminant livestock breeds and their habitats. No damaging environmental effects have been identified.

10) Stakeholder involvement.

The designers have done an impressive job of involving a wide variety of stakeholders in project preparation. This work has taken place at the project sites, and at the country and regional levels. The diagram of the project's organizational structure (Annex 2H) presents the various organizations and committees involved. The proposals regarding the lines of communication between the different actors appear appropriate.

The community based approach taken in this project is consistent with the widespread recognition among rural development professionals that a decentralized, participatory approach is much more effective and sustainable than other approaches. The Project Brief, however, does not explicitly recognize the fact that local communities do not necessarily have a single point of view on issues. Rural communities in West Africa tend to be stratified by age, kinship and gender. In addition, they often reflect different interests based on wealth, involvement in the market, political affiliations etc. These differences can pose significant challenges for those working with such communities, as well as for those within the communities who are trying to reach agreement on contentious issues. In view of the heavy emphasis on the project's involvement with communities, it might be useful to briefly discuss in the Project Brief the designers' views on such issues.

There are several references in the project documents to (a) the involvement of women in the project and (b) the value of indigenous knowledge. It might be useful to specify what concrete steps will be taken to ensure that these two issues will be effectively followed up during project implementation.

The Project Brief states that at the project site level: "Efforts were made at each site to consult with migratory, transborder pastoralist populations and/or their representatives." It would be useful to briefly explain the results of these efforts, and to specify how these groups will (or will not) be involved in the project. Given the project's 10 year time period and the importance of the community sites to the success of the project, it may be useful to consider adding a conflict mitigation component in an effort to cope with on-going or potential problems.

11) Capacity building.

The heavy emphasis on capacity building at various levels is one of the strongest aspects of this project. The discussion of capacity building at the grassroots level is particularly appropriate. Building effective capacity at the various levels is essential to the achievement of the project's objectives and to long term sustainability of project activities. (See point 6 above for additional discussion of capacity building.)

12) Innovativeness of the project.

This is an important project that utilizes a regional approach in an effort to ensure sustainable populations of selected endemic ruminant livestock breeds, and their habitats, in four West African countries. The

combination of the various components (briefly described above) and the regional approach make this an innovative project that may become a model for other efforts to conserve endemic livestock and their habitat.

Notes re editing

Re Table 2 on page 31: Outcome 2 and its benchmark indicators are missing.

Re the Incremental Cost Estimate and Summary (page 41): it would be useful to include in the text a brief explanation providing an overview of what the baseline includes and why, and provide a reference to the two relevant annexes (F+M). The following statement needs revision: "These GEF funds have leveraged US$19,590,000 in co-financing for the sustainable development baseline."

General: in the text of the Project Brief it is not always clear if the discussion refers to livestock producers in general or only to producers of endemic livestock.

Acronyms: some of the acronyms used in the Project Brief are not included in the List of Acronyms.

Re 2g M & E, paragraph 136: The first sentence might end with "overstated" not "understated."

Re page 52: the acronym RTSC is frequently written "RSTC"

ANNEX 2Cii: Response to STAP Review

Comment 1

Strengthening the commercialization and marketing systems of endemic ruminant livestock and their products is an essential step in the conservation of endemic breeds. However, it might prove difficult to provide the level of opportunities and services described in the project documents to producers of endemic livestock. If the project is successful in this regard, those assisted by the GEF project will have better services and opportunities than those available to most poor livestock producers in the sub-region. If this situation occurs and is successfully dealt with, the project might become a kind of pilot exercise (even model) in the region for combined livestock development, poverty reduction and environmental conservation. On the other hand, there is the risk that certain project services might be co-opted or misused by those involved in the production and marketing of exotic (particularly zebu) livestock.

Response 1

The project design recognizes that commercialization strategies that target only certain livestock genotypes are a challenging task. The project strategy is to identify and explain the unique attributes of the target genotypes, and to then develop commercialization strategies that identify and exploit markets for these unique attributes (e.g. niche markets). As the reviewer notes, a universal marketing strategy that lacks a specific focus on the target breeds could be overrun by other (e.g. exotic) breeds. However, models that will allow for the development of markets specific to endemic breeds, but within the larger market framework of the sub-region, will be developed and tested. For example, markets for crossbreeds that also involve the targeted endemic breeds could provide the opportunity for a stratefied structure which involves purebred endemic livestock producers who safeguard the purity of the 'raw material' (the pure indigenous breeds) as well as producers of crossbreeds who sell to traders.

Comment 2

While the project's approach is appropriate, some of the assumptions presented in the logframe (Annex 2A) may be optimistic. Examples include assumptions: concerning livestock exports (outcomes 2 and 4), the effectiveness of community advocates' lobbying regarding decentralization and a legal framework (outcomes 3 and 4), and no subsidies or incentives for non-endemic livestock.

Response 2

Regarding livestock exports, Outcome 2 says: "Sub-regional institutional and policy framework for endemic ruminant livestock will preclude adoption of tariff and non-tariff barriers hindering endemic ruminant livestock exports", while Outcome 4 says: "Exports of endemic ruminant livestock and livestock products to countries outside the sub-region are not prevented by increased supra-regional competition or barriers to entry". In reference to the first point, it is the belief of the project design team that the policy and institutional work that will be carried out under the project, in particular at the level of sub-regional cooperation, will help to prevent the four governments from erecting (or maintaining) barriers to exports of endemic livestock and livestock products in the form of tariffs, quotas, or other forms. Further, at present these barriers by and large do not exist, and would likely be difficult to implement given the logistical challenges of controlling cross-border movements of live animals within the sub-region. Thus, although there must be some concern that attempts might be made to erect barriers to either increase state

revenues or create preferential markets for exotic breeds, the project is designed to minimize this risk as much as possible. In reference to the second point, there is some risk that the project's efforts to improve production and marketing of endemic breeds could be counteracted by large, external forces that would either a) greatly increase imports into the sub-region of competing livestock and livestock products, presumably from other areas of West Africa, and/or b) that other countries which we see as strong potential export markets might simply put up barriers to entry (quotas, tariffs, etc.) that would prevent developing export markets for the herders within our sub-region. However, the project design team identifies these as factors beyond the control of the project, much like several of the other assumptions in the last column of the logframe (e.g. conflict, natural disasters, and macro-economic conditions). The project is not, and cannot, be designed to address these larger external factors, and is simply trying to identify relevant concerns that help to define the context of the project and the risks inherent in trying to achieve these two project outcomes.

Regarding the effectiveness of lobbying for decentralization and a legal framework, Outcome 3 says: "Community advocates effectively lobby authorities to support decentralization of natural resources management", while Outcome 4 says: "Awareness raising and advocacy will ensure enactment of a legal framework regarding endemic ruminant livestock management in a timely and widely supported manner". It is the opinion of the project design team that these are realistic assumptions, given the amount of project resources focused on these outcomes, the 10-year timeframe in which to implement these actions, the commitment of the four relevant governments as partners in the project, and perhaps most importantly, the fact that decentralization is already a priority in each country (as noted in paragraph 99 of the Full Project Brief).

Regarding the subsidies or incentives for non-endemic livestock, Outcome 4 says: "Sub-regional institutional and policy framework for endemic ruminant livestock will preclude adoption of subsidies and incentives for non-endemic livestock production, livestock cross-breeding, and/or land clearance for agriculture". Outcome 4 tries to address the impact of exotic breeds on endemic breeds that comes through government sponsored and/or sanctioned projects which include subsidies for exotic livestock raising such as distribution of animals at zero or very low costs, using free exotic animals that have been donated by foreign governments, NGOs, etc. Such programs are taking place because of a lack of specific policies to promote and conserve local breeds, and a lack of awareness among foreign governments, NGOs and others on the importance of endemic breeds and their superior characteristics for promoting sustainable development goals. The removal of subsidies alone will promote desired outcomes, and together with specific incentives for endemic breeds, a positive environment for endemic livestock raising will be developed within the sub-region. As for the issue of land clearance for agriculture, the project will demonstrate the unsuitability of such practices in much of the habitat that is critical for endemic ruminant livestock, in terms of environmental degradation, increased conflict, and low economic returns of agriculture in these areas in the absence of subsidies.

Comment 3

This reviewer fully supports the present project, but it needs to be recognized that the project faces a stiff challenge in achieving its objectives. The main reason is that endemic ruminant livestock are not highly regarded in the sub-region by many (perhaps most) policy-makers, officials, farmers, herders and livestock traders. Livestock owners view endemic breeds as inferior in terms of productivity (milk, meat), marketing opportunities and draught power. For these reasons, they cross-breed their animals in an effort to increase productivity and strength, or they switch to exotic breeds. For these reasons, the project is swimming against the currents of change that have been going on for many decades. Project designers

are well aware of these problems and present them clearly in the documents. They argue that there is a limited understanding of the advantages of endemic breeds, and they have designed the project to overcome these perceptions. However, the widespread view that the endemic breeds are inferior to cross-breeds and exotics may well make it difficult for the project to gain and maintain support among various stakeholders – and this, in turn, could make it difficult for the project to realize its goals and become sustainable. Much will depend on the quality of the individuals recruited by the project and of the approach taken to deal with these problems.

Response 3

The reviewer's comment summarizes what was a primary concern of the project designers from the early stages of the project concept – the concern that policy makers AND farmers were decisively positive towards exotics and crossbred species and wanted to see the indigenous livestock replaced. However, during the project preparation phase - PDF-A and PDF-B implementation phases - the outcome of numerous consultations convinced the project design team that the trend is not one of choice, but one driven principally by lack of alternatives and absence of sufficient information, the latter both at the government policy levels and at the herder level. The histories of how and why exotic breeds came to be introduced in certain areas were recounted by numerous stakeholders, and many stories were told of bad experiences associated with exotic germplasm. During these consultations, one of the most common questions asked of the project team was: "what can we do to increase off-take and returns from the local breeds, whose husbandry we already know and whose adaptation to local conditions has no rival?". Based on the results of these extensive consultations and other assessments of the institutional, policy, and socio-economic contexts relevant to the project, it is the strong conviction of the project designers that the project strategy to halt and reverse the replacement of endemic breeds with exotic breeds will succeed if implemented with herder groups that develop strong views about the positive attributes of endemic breeds, and who are supported by government policymakers, international institutions, and NGOs with a good understanding of "sustainable agriculture". The bottom line is that farmers producing pure indigenous livestock will have avenues to benefit from their enterprises. The premise is that the relatively smaller outputs (meat, milk, etc) from indigenous breeds will be more than compensated for by low inputs in terms of disease control, feed and water requirements, etc. Success at a few pilot sites will underpin and engender broader promotion of the principles and concepts, as herders, government officials, and international program managers all respond most forcefully to demonstrated successes in the field. The preceding explanation has now been included in the Project Brief in the Project Rationale section (paragraph 65).

Comment 4

The community based approach taken in this project is consistent with the widespread recognition among rural development professionals that a decentralized, participatory approach is much more effective and sustainable than other approaches. The Project Brief, however, does not explicitly recognize the fact that local communities do not necessarily have a single point of view on issues. Rural communities in West Africa tend to be stratified by age, kinship and gender. In addition, they often reflect different interests based on wealth, involvement in the market, political affiliations etc. These differences can pose significant challenges for those working with such communities, as well as for those within the communities who are trying to reach agreement on contentious issues. In view of the heavy emphasis on the project's involvement with communities, it might be useful to briefly discuss in the Project Brief the designers' views on such issues.

Response 4

The reviewer is correct in identifying this as a crucially important issue. There is always significant diversity among community members on views that touch on contentious and complex issues, for example what kind of livestock should be raised. For this reason, the project proposes to promote adoption strategies that will allow individual community members to take different approaches based on their own cost-benefit analyses. For example, during the PDF-A and PDF-B consultations, the project team did find among some stakeholders views that were strongly supportive of exotic technologies as a means to "improve income and human livelihoods". Even following the demonstration of the value, profitability and sustainability of livestock production systems based on indigenous breeds, there will always be (a few) farmers who will opt to raise exotic breeds. As mentioned in the comment above, the existence of such farmers with interest in exotics and crossbreeds may provide for the stratified breeding structure that provides crossbreeds for specific markets but who will depend on purebred suppliers. In the case of endemic ruminant livestock within the sub-region, farmers who opt for larger but less adapted breeds - perhaps for prestige/social standing – are likely to be more wealthy individuals, as these breeds require much higher inputs and the economic risks of raising exotic breeds are higher. Thus, those wishing to participate in the project activities are unlikely to be deterred by financial constraints, and individuals within any given project pilot site community can and will opt for raising endemic, exotics, or a combination thereof, and still see benefits from the project implementation. These comments serve simply to show one area in which communities may have differences of views and how this will be addressed in the project. There are obviously other possible sources of differences of opinions, goals and approaches. A version of the preceding explanation has now been included in the Project Brief in the Stakeholder Involvement section (paragraph 118).

Comment 5

There are several references in the project documents to (a) the involvement of women in the project and (b) the value of indigenous knowledge. It might be useful to specify what concrete steps will be taken to ensure that these two issues will be effectively followed up during project implementation.

Response 5

During the design phase of the project, the role played by women in different components of livestock production and use (and with different species of livestock) was documented extensively. This information will be used in facilitating composition of different groups/committees at the sites – while taking care to respect gender roles in local communities. The dynamics of groups as they function during the project implementation will be closely monitored to ensure that gender roles and possible conflicts are captured and lessons learnt fed back into refining the project implementation process. The idea is to ensure that practices promoted in the cause of the project are those that find favor with the community; the project team will also point out observations made that need to be communicated to the community to further their own goals in the project. These may include such things as observed success rates by different gender groups in performing given functions - e.g. sales or developing a specific livestock product. Social science input will be required to ensure that there is minimal conflict between promotion of the desired project goals and comfortable gender roles as practiced by the community. A version of the preceding explanation has now been included in the Project Brief in the Stakeholder Involvement section (paragraph 119).

Regarding indigenous knowledge, as much information/knowledge as possible regarding livestock and ecosystem management practices in traditional systems will be collected during the implementation of the

project. Indigenous/traditional knowledge will be collected with due consideration to free prior informed consent of knowledge holders for the disclosure or use of that knowledge. Where feasible the project will promote mechanisms to acknowledge holders of indigenous knowledge and share benefits with them where relevant. Also, indigenous knowledge in many cultures/societies is being lost or eroded due to changing lifestyles where it is not being passed from one generation to the next, and the project (perhaps through local NGO partners) will look at ways to promote active teaching and learning of indigenous knowledge within community groups (not only its documentation) and thus prevent against its loss. Indigenous knowledge to be collected will likely include habitat management (land use allocation, grazing patterns, forest management, etc.), animal management (animal health, feeding, herd composition, etc), animal uses/products (including meat, milk, craft products, etc.), and others. The extent to which such information can help contribute to continued profitable and improved use, including commercialization, of the indigenous breeds will be explored. Options which can be promoted/mainstreamed into innovative strategies will be tried at the pilot project sites with a view to their further evaluation and possible inclusion into the 'innovation packages' that will be replicated for future wider use. A version of the preceding explanation has now been included in the Project Brief in the Stakeholder Involvement section (paragraph 120).

Comment 6

The Project Brief states that at the project site level: "Efforts were made at each site to consult with migratory, transborder pastoralist populations and/or their representatives." It would be useful to briefly explain the results of these efforts, and to specify how these groups will (or will not) be involved in the project. Given the project's 10 year time period and the importance of the community sites to the success of the project, it may be useful to consider adding a conflict mitigation component in an effort to cope with on-going or potential problems.

Response 6

While the project team did consult with migratory, transborder pastoralist populations during the PDF-B phase in order to better understand their resource use patterns and land ownership/management traditions and challenges, it was not possible given the limited timeframe and funds available to carry out comprehensive studies to systematically record transhumance patterns and impacts and to investigate the practices and perceptions of the different stakeholder herder groups. Instead, the project proposes to collect and analyze quantitative and qualitative data over the first three years of the implementation period on migration/transhumance patterns and trends (i.e. increases and/or decreases in numbers of herds and numbers of animals, composition of herds involved in terms of breeds, etc), the impact of such trends on endemic livestock populations (e.g. trypanotolerant livestock), existing perceptions of sedentary farmers/herders as well as transhumant herders, and suggestions on ways to resolve possible conflicts (this focus on assessment of transhumance has been made more explicit by the addition of Activity 3.1.4 under Output 3.1). On the basis of the results of this assessment, landscape and herd management strategies, including conflict management strategies under the aegis of the proposed Site Level Steering Committees, will then be applied during the remainder of the implementation period. (This focus on the application of strategies for managing transhumance has been made more explicit in Activity 3.3.3 under Output 3.3). Finally, as noted in paragraph 165 of the Project Brief, the project team will benefit from lessons learned and coordination with the UNDP/GEF project for "Enabling Sustainable Dryland Management through Mobile Pastoral Custodianship", as it begins implementation in the latter part of 2004. This "Global Pastoral Programme, which specifically aims to study and demonstrate the value and sustainability of pastoral management systems (including transhumance), is expected to provide valuable

lessons to the West Africa livestock project in raising awareness about the benefits/importance of pastoral management systems to nature conservation, cultural heritage, and the livelihoods of nomadic peoples, and in developing strategies for lifting the key barriers to enabling pastoral custodianship.

Comment 7
Re Table 2 on page 31: Outcome 2 and its benchmark indicators are missing.

Response 7
This information has been added.

Comment 8
Re the Incremental Cost Estimate and Summary (page 41): it would be useful to include in the text a brief explanation providing an overview of what the baseline includes and why, and provide a reference to the two relevant annexes (F+M). The following statement needs revision: "These GEF funds have leveraged US$19,590,000 in co-financing for the sustainable development baseline."

Response 8
Reference to Annexes 2F and 2M has been added to page 41, and the sentence noted has been changed in the Brief and in Annex 2F. An explanation providing an overview of the baseline has not been added, however, as the baseline is describe in detail in the Annexes, while this description in the Brief is meant to be a brief summary only (per GEF guidelines).

Comment 9
General: in the text of the Project Brief it is not always clear if the discussion refers to livestock producers in general or only to producers of endemic livestock.

Response 9
The text of the Executive Summary, Project Brief, and Annexes has been reviewed and edited as needed to respond to this point (changes have been made throughout the documents).

Comment 10
Acronyms: some of the acronyms used in the Project Brief are not included in the List of Acronyms.

Response 10
Additional acronyms have been added to pages 4-5 of the Project Brief.

Comment 11
Re 2g M & E, paragraph 136: The first sentence might end with "overstated" not "understated."

Response 11
The text has been corrected at the point specified.

Comment 12
Re page 52: the acronym RTSC is frequently written "RSTC"

Response 12
The text has been corrected at the point specified.

ANNEX 2D: Public and Institutional Participation Strategy

The proposed project depends on a high level of involvement by many different stakeholders throughout the sub-region. Indeed, one argument of the project is that conservation of animal genetic resources in the sub-region has met with only limited success because of the low levels of collaboration between the wide numbers of different stakeholders (farmers and livestock herders, agricultural institutions and agents, livestock industry representatives, environmental conservationists, researchers, policymakers, etc.) that need to be involved in such efforts. The existing lack of adequate stakeholder interaction, coordination and input into overall management and decision-making for endemic ruminant livestock conservation and sustainable use is evident at several levels. At one level there is a lack of integrated and coordinated activity by relevant government agencies that, although they share many mutual objectives, have no structured means to work together, and in some cases even compete for territorial or managerial control. At another level, historical management approaches do not include mechanisms for consultation and the participation of non-government stakeholders such herders and farmers, local communities, private sector entities and NGOs.

In each country, five project pilot sites have been selected (three primary sites which will be the focus of all project interventions at the local level, and two secondary sites which will be the focus of public awareness programs in preparation for replication of activities at the primary sites). Extensive consultations with community members at both the primary and secondary sites took place during the PDF-B phase, as detailed in Section 2 e i of the Full Project Brief, and the project will build on the public participation work accomplished during that period.

At the site level, public participation will be promoted through the formation of local level steering committees in each of the pilot areas, which will include public representatives such as farmers, herders, traditional and elected local leaders, representatives of resource user, production and marketing associations, and others (membership and roles of these committees are detailed Section 2 e i of the Full Project Brief). These community representatives will be joined by local personnel of resource management agencies, livestock and farmer outreach workers, and other technical personnel. These representatives of communities and other stakeholders in the pilot areas also will be invited to participate in the project's national steering committees.

For the project site level committees to develop into effective entities, their responsibilities will be gradually increased and broadened as the project progresses, and a dedicated effort to ensuring that adequate capacity is developed will be made to ensure that they will continue to function and develop *post*-project as permanent community resource management entities. The project will therefore support significant training and capacity development for these new bodies. Most critically, it will also support a pilot period of project activity implementation at each site during which the effectiveness of these entities can be tested, real gaps in design or capacity identified, and remedial action undertaken.

At the national level, government policy makers, resource managers, researchers, and livestock industry representatives will play an integral role in the project implementation. The strong support of country partners to the project is reflected in the national government commitments for financing and implementation of proposed project activities, and the extent of government agency participation in the financing and implementation of PDF-B phase activities, in particular in collecting and assessing scientific and socio-economic data that has been used to design the full project. The primary mechanism for

stakeholder participation at the national level will be the four national steering committees (membership and roles of these committees are detailed Section 2 e i of the Full Project Brief).

Similarly, through the involvement of international partners, it is expected that the interests and experiences of a wide range of key stakeholders from other countries and international agencies will be incorporated, including international institutes focused on livestock research and production. The project will seek to ensure that participation of this wider range of stakeholders is organized to the optimum benefit of animal genetic resources conservation concerns and the interests of the local communities, both at the project pilot sites and throughout the sub-region.

Specific mechanisms to ensure stakeholder involvement, including public participation, in project implementation at the local (site), national and sub-regional levels are described in Section 2f of the Full Project Brief. Also, details on the role of various stakeholders in project monitoring and evaluation are provided in Annex 2P – Monitoring and Evaluation Plan.

The following stakeholders have already participated in the PDF-A and PDF-B phases, and are expected to continue to participate during the full project phase (this list is indicative rather than exhaustive):

1. Local (site) level[2]:

- Farmers, herders, and other resource users
- Community administrators and leaders
- Traditional chiefs/leaders
- Local representatives of national institutions/agencies (e.g. Ministries of Agriculture, Environment, etc.)
- Extension service agents (livestock, agriculture, water, forestry)
- Local agricultural/livestock association and cooperative leaders
- Local NGOs

2. National level

National Executing Agencies

- Department of Livestock Services, National Environment Agency (Gambia)
- Direction Nationale de l'Elevage, Secretariat Permanent du Conseil National de l'Environnement (Guinea)
- Direction National de l'Appui au Monde Rurale, Ministere de l'Environnement (Mali)
- Direction de Elevage; Ministere de l'Environnement (Senegal)

National research and management institutions

- National Research Institute (Gambia)
- Institut de Recherche Agronomique (Guinea)
- Research Unit on Genetic Resources of Bamako (Mali)
- Laboratoire National d'Elevage et de Recherches Vétérinaires/ISRA (Senegal)

[2] Project Sites: Gambia (Niamina East, Kiang West, Nianija, Sami, Kombo East); Mali (Madina Diassa, Manankoro, Sagabari, Touseguela, Koundian); Guinea (Gaoual, Dinguiraye, Beyla, Mandaina Siguiri, Faranah et Mamou); Senegal (Bandafassi, Wassadou, Tenghori, Médina Yoro Foula, Ndiamacouta)

National Agricultural Research Centers

- National Research Institute (Gambia)
- Institut de Recherche Agronomique (Guinea)
- Rural Economic Institute (Mali)
- Laboratoire National de Recherches Vétérinaires/ISRA; Centre de Suivi Ecologique (Senegal)

National Resource Management Institutions/Agencies

- Department of State for Agriculture; Department of Agricultural Services; Department of Forestry; Department of Livestock Services; Department of Parks and Wildlife Management; Department of Fisheries (Gambia)
- National Livestock Direction, and the relevant Livestock Support Centers at the project sites; National Direction for Water and Forests; National Direction for the Environment of the Ministry of Mines, Geology and Environment; Ministry of Scientific Research and Higher Education's National Direction for Scientific Research (Guinea)
- Ministry of Environment's National Direction for Nature Conservation; Ministry of Rural Development and Water's National Direction on Rural Infrastructure, National Direction for Rural Assistance (DNAMR); and Directorate General for Regulations and Control (DGRC) (Mali)
- Directorates of Livestock, Agriculture and Environment, CONGAD, National Council of Rural Concertation (CNCR) (Senegal)

National Academic Institutions

- University of Conakry - Faculty of Biology and the Higher Institute for Agronomic and Veterinary of Faranah (Guinea)

Other National Stakeholders

- Ministries of Finance (and/or Development & Planning)
- Ministries of Law
- Women's associations
- Livestock dealers associations
- Livestock breeders associations
- National herder's associations (e.g. National Coordination Committee for Herders of Guinea - CCNEG)
- Agricultural Industry Institutions and Agencies (e.g. livestock marketing and production agencies and associations)
- National conservation and/or sustainable development NGOs
- FAO National Coordinators for Animal Genetic Resources

3. Sub-regional or International Level

Research and management institutions and programs

- Agricultural Research Center for International Development
- International Center for Livestock Research and Development in Subhumid Zones
- West and Central African Council for Agricultural Research and Development
- Food and Agriculture Organization
- Forum Africain pour la Recherche Agricole
- International Livestock Research Institute
- International Trypanotolerance Center
- Research and Development Project for Livestock Farming in West Africa

- NEPAD: New Partnership for Africa's Development
- ICRAF: International Center for Research in Agroforestry
- IRCISAT: International Crops Research Institute for the Semi-Arid Tropics
- West Africa Regional Focal Point Office of the FAO Global Strategy for the Management of Farm Animal Genetic Resources

International Donor Agencies

- United Nations Development Programme
- African Development Bank

ANNEX 2E: Response to GEFSEC and Council comments at work program inclusion

N/A

ANNEX 2F: Incremental Cost Assessment

1. Regional Context and Broad Development Goals

General poverty characterises the development situation within the four countries of the sub-region (The Gambia, Guinea, Mali, and Senegal). Poverty is a key factor in all of the environmental threats facing these nations, and food production per capita and daily per capita supply of calories are key concerns. The Gambia has no important mineral or other natural resources and has a limited agricultural base. About 75% of the population depends on crops and livestock for its livelihood. Small-scale manufacturing activity features the processing of groundnuts, fish, and hides. Unemployment and underemployment rates are extremely high. Guinea possesses major mineral, hydropower, and agricultural resources, yet remains a poor underdeveloped nation. Long-run improvements in government fiscal arrangements, literacy, and the legal framework are needed if the country is to move out of poverty. Mali is among the poorest countries in the world, with 65% of its land area desert or semi-desert. About 10% of the population is nomadic and some 80% of the labour force is engaged in farming and fishing. Senegal has undertaken significant economic reforms with the support of the international donor community, and government price controls and subsidies have been steadily dismantled. On the negative side, Senegal faces deep-seated urban problems of chronic unemployment.

Development of the livestock sector and improved management of natural resources are priorities in all four participating countries. In The Gambia, the National Biodiversity Strategy and Action Plan (NBSAP) of 1999 provides a comprehensive framework for sustainable biodiversity conservation and management, including an emphasis on in-situ conservation of Animal Genetic Resources (AnGR) as one of the means of conserving biological diversity in the country. In the livestock sub-sector, the project will support the Gambia's Rural Sector Support Policy (RSSP), which is aimed at increasing rural productivity, including that of endemic livestock, and also seeks to attain food security, to generate foreign exchange through the export of livestock and its products, and to increase employment in rural areas. In Guinea, the Agriculture Development Policy (LPDA) of 1987 (renewed in 1997) outlined four priorities for livestock management in Guinea: exclusive utilization of local breeds; rural development linked to improved livestock performance; active participation of rural communities; and the regionalization of programs. Within the strategy for improved livestock performance, the selective breeding of N'dama cattle among small farmers was identified as a priority activity. The proposed project also address several priorities of Guinea's National Biodiversity Strategy and Action Plan (NBSAP), *inter alia*: (i) strengthening *in-situ* biodiversity conservation with popular participation, and (ii) sustainable use of biodiversity (through the restoration of degraded ecosystems, promotion of alternative sources of energy, and creation of innovative funding mechanisms for biodiversity conservation initiatives).

In Mali, the National Environmental Action Plan and the National Action Programme to Combat Desertification (PNAE/PAN-CID) have adopted as a priority goal the optimal improvement of animal production and the expansion of animal draught cultivation, while preserving the natural environment. Furthermore, the NBSAP lists as one of its five primary objectives the preservation of local varieties and breeds of domestic animals under the threat of extinction. Mali has developed and is in the process of implementing a Pastoral Code, which defines many aspects of pastoral land management, including obligations to support the fight against desertification, to maintain natural ecosystems, and to ensure habitat conservation. Finally, Mali has developed a National Strategy to Combat Poverty (SNLP), which recognizes the degradation of natural resources as an important cause of poverty. The proposed project's strategy of developing community management of livestock habitat and resources (forage, water, etc.) will support decentralization and territorial management efforts in Mali. In Senegal, the NBSAP advocates the

integration of measures for *in-situ* conservation of animal and plant species within rural planning and development programmes. In addition, it stresses the need to establish mechanisms to strengthen the regulation on the introduction of exotic genes. The proposed project addresses all six general strategic options of the NBSAP, including: strengthening the capacities of various actors for biodiversity conservation; and developing sub-regional and international cooperation in the area of biodiversity management. In the livestock sector, Senegal's Policy on Livestock Development and the Livestock Action Plan has set production intensification and ecosystem preservation as priority goals.

2. Global Environmental Objective and Incremental Cost Analysis

The global environmental objective to which the project will contribute is to ensure sustainable populations of targeted endemic ruminant livestock breeds in four West African countries in order to improve rural economies and to ensure the conservation of these breeds and their globally unique genetic traits. The immediate objective of the GEF project is to establish effective models for community based management of endemic ruminant livestock and their habitat at project pilot sites, and strengthen production, market, and policy environments in support of these breeds

The three endemic ruminant livestock breeds that the project is designed to conserve – the N'dama cattle, the Djallonke sheep, and the West African Dwarf goat – have unique trypanotolerance traits of global significance. Trypanosomosis is arguably the single most important constraint to animal production in the subhumid and humid zones of Africa. The total loss to agricultural production and social development in areas affected by the tsetse fly (the trypanosomosis vector) is currently estimated at US$50 billion per year. The option of using trypanotolerant livestock reduces or eliminates the use of chemicals and bush clearing for controlling the vector, contributes positively to balanced ecosystem health, and preserves globally significant animal and plant biodiversity in natural ecosystems.

The global significance of endemic ruminant livestock in West Africa does not rest solely on their resistance to diseases. Animal genetic resources (AnGR) that have evolved in diverse tropical environments represent unique combinations of genes which define not only productive qualities but also adaptive capability. For the endemic ruminant livestock breeds on which this project is focused, other traits are critical contributors to maintaining household incomes and food security throughout large areas of sub-Saharan Africa, and the unique genetic information represented by these traits could benefit low-income farmers and herders throughout the world if it is conserved, identified, and disseminated through selective breeding programs. These important traits include: resilience under adverse climatic and poor resource (feed) conditions; tolerance to high temperatures and humidity; and ability to utilise low-quality (high fibre) diets. Such traits among endemic ruminant livestock populations in West Africa allow these breeds to prosper under varied and often severe conditions (from semi-arid to semi-humid) that are found also in many other low-income countries where rural populations rely heavily on domestic animal resources. Further, these traits are often the only means for achieving sustainable agriculture in low-input production systems, and thus represent a globally significant means for conserving varied natural ecosystems.

3. Baseline

Overview

Programmes and projects for the development and improvement of endemic ruminant livestock productivity exist already within the sub-region. For example, various national and regional initiatives have

been undertaken to test and implement purebred N'dama cattle selection programmes in order to improve milk and meat productivity. However, most of these programs are focused on *ex-situ* strategies, rather than in-situ conservation of endemic ruminant livestock and protection of their habitats. Similarly, baseline projects focusing on management of natural resources and ecosystem conservation exist within the sub-region, but none are focused specifically on endemic ruminant livestock habitat or the importance of preserving the genetic diversity of these breeds. In other words, there are no specific mechanisms or models that link animal genetic resource conservation with sustainable ecosystem management. Numerous other gaps exist in the baseline, as will be detailed below. For example, most existing programs for endemic ruminant livestock conservation focus solely on N'dama cattle, with little attention being paid to small ruminants and even less attention on integrated conservation strategies for multiple livestock species. In addition, there are no existing programs focused on the creation of viable models for the application of economic incentives, which are essential long term ingredients for ensuring sustainable in-situ conservation of endemic livestock.

Nevertheless, some baseline interventions have prepared the ground and established reference points upon which it will be possible to build progress. In Mali, a project in the Yanfolila area has challenged the validity of sectoral approaches in favor of a more holistic approach whereby linkages can be established between improvement of N'dama cattle at the farm level and the adoption of pastoral management systems. Another useful baseline example is a Guinean programme to genetically improve the N'dama breed with effective integration of traditional livestock farms in the selection process, where complementary actions were conducted on herd and rangeland management along with the creating and strengthening collaborative relationships between livestock farmers and research stations.

A detailed list of baseline programs and projects, with information on objectives, implementing agencies, donors, and budgets, is provided in Table 1: Summary of Baseline Funding by Outcome.

Policy, Institutional, and Legal/Regulatory Frameworks

The *in-situ* conservation of endemic ruminant livestock in West Africa faces numerous legislative and regulatory obstacles. Countries within the sub-region, confronting a daunting history of poverty and frustrated development attempts, have tended to favor within the livestock sub-sector those species that allow them to increase animal production without taking into account long-term consequences. As such, these countries have developed policies, laws and regulations that favor exotic breeds that generate higher meat and milk production, regardless of the environmental and economic costs associated with adoption of these animals. Even when endemic breeds are favored in policy, actions on the ground often contravene stated policies. For example, the long-term livestock development plan 2005-2010 in Guinea selected N'dama cattle as the priority breed for conservation, and yet decisions taken since then have directed government resources towards cross-breeding N'dama with exotic breeds to increase milk production.

The extensive legal and policy study carried out during the PDF-B phase showed the insufficiency of existing policies, laws and regulations relating to animal genetic resources in the countries of West Africa. There is no shortage of general policies to improve sustainable resource management, to increase animal production to improve food security and reduce import dependence, or to improve rural incomes by diversifying and increasing revenues from animal production and establishing sub-regional markets. In addition, all of the participating countries have identified sustainable management of livestock resources and habitats, and conservation of endemic breeds, as goals within their NBSAPs, reports to the UNCCD,

and other international agreements and programs. However, implementation of funded programs for these goals, or creation of the laws and regulations needed to support them, has yet to take place. At the legal level, legislation remains highly sectoral and rarely takes account of biological diversity, genetic dilution, or ecosystem carrying capacities. The application of laws and enforcement of regulations frequently poses problems because of the lack of consultation in the development of these measures, as well as the lack of authority and resources possessed by many of the management agencies with responsibility to intervene.

Another gap in the baseline of policies and laws related to conservation of endemic ruminant livestock breeds and their habitat is the failure to incorporate important aspects of the native African cultures within the sub-region. Traditional uses and customs have integrated preservation of biological diversity and conservation of native breeds as part of their practices over many hundreds of years, yet these practices remain poorly understood and outside the framework of codified laws and policies. This is particularly true regarding the regulation of transhumance, where traditional resource management systems have declined or been ignored, while at the same time there is a distinct lack of land tenure legislation conducive to a balanced and sustainable agricultural and livestock production.

On the plus side, institutionalization of traditional biodiversity conservation practices has begun in certain countries (e.g. Mali). This trend should be extended in the other countries, particularly since the four countries share many of the same ethnic groups who move across national borders with their herds. As for transhumance, there have been recent initiatives by the governments in all four countries to address this issue. Senegal has increased the responsibilities of local government and local communities for natural resource management. Mali has developed and is in the process of implementing a Pastoral Code, which will define the roles, rights and responsibilities of pastoral communities. Gambia and Guinea have been experimenting with legislation for private ownership of land, and are considering the implications for communal pastures. These initiatives form a productive baseline for the project's activities in establishing sustainable systems for transhumance, and more generally for promoting conservation and sustainable use of the natural habitats of endemic livestock.

Regarding sub-regional coordination, the policy, legal and regulatory frameworks for animal genetic resources are characterized by a very low level of cohesion and coordination among the different countries. The idea of strengthening sub-regional cooperation in these areas has widespread support, and most countries also support the strengthening of technical information exchanges among the agencies with responsibility for the livestock sector and/or environmental management. However, actual progress remains slow, and no baseline activities were identified that focus on policy or legal issues related to endemic ruminant livestock at the sub-regional level.

Research and Monitoring

A number of research initiatives addressing *in-situ* endemic ruminant livestock conservation are taking place within the sub-region. The International Trypanotolerance Centre (ITC) is working in partnership with national research systems in each country to improve the genetic potential of N'dama cattle and Djallonké sheep within a broader framework aimed at fighting poverty. A similar initiative is under way at the International Center for Livestock Research and Development in Sub-Humid zones (CIRDES), focusing on other breeds of trypanotolerant livestock, such as the West African Short Horn. The FAO Global Strategy for the Management of Farm Animal Genetic Resources is a world-wide initiative for promoting regional networking and coordination among national research systems for the sustainable use of animal genetic resources. The FAO program has established a West Africa Regional office in collaboration with UEMOA, CILSS and CORAF, that is instrumental in supporting national counterparts

with capacity building, regional and national databases on farm animals, and assistance with the development of pilot projects. The Animal Genetic Resources global program of the International Livestock Research Institute is conducting research on conservation and utilization of indigenous genetic populations of cattle, Asian buffalo, sheep, goats and yak, through a better understanding of the genetic diversity in indigenous livestock breeds. One of the major activities in this programme is the application of genetic markers (DNA microsatellites) for identification and characterization of genomic regions in order to unravel the domestication origins and evolutionary history of indigenous breeds. All of these regional and national initiatives are connected in a synergistic network of research institutions (Africa Trypanotolerant Network) which endeavors to advance knowledge of all trypanotolerant livestock breeds.

For the most part, these existing research programs are focused on *ex-situ* conservation of endemic livestock. As noted throughout the Full Project Brief, ex-situ conservation programs alone are not a sufficient strategy for conserving endemic ruminant livestock within the sub-region. Moreover, existing *ex-situ* programs lack representation of the full genetic diversity of the target breeds, and although some capacity exists in the sub-region for storage of semen and embryos, only a few of these facilities have reliable logistics and supplies of materials needed to carry out semen and embryo production and storage. Thus, the proposed project represents an important complement to the baseline situation.

Livestock Production and Productivity

Reflecting the importance of the livestock sub-sector to the economies of countries within the sub-region, numerous baseline programs and projects exist related to improving livestock production and productivity. These programs include efforts a number of breeding programs, primarily attempts to cross-breed endemic livestock with exotic breeds in order to increase meat and milk productivity. Other programs are intended to improve livestock production on rangelands, from establishing watering and grazing facilities to developing feed management techniques to improve the nutrition of the animals (especially in the dry season). In Guinea, a large-scale effort to improve livestock security has also been implemented in which over 520,000 head of cattle were branded. Other projects are focused on improving the processing of livestock and livestock products and increasing their value, such as the establishment of small scale slaughter facilities, and development of cottage industries (for milk processing and leather works) in order to encourage off-take and add value to livestock products.

Several projects have approached the livestock production issue by looking at human resources in pastoral settings. A number of rural finance projects to increase farmer's access to capital and thus ability to implement production improvements have been undertaken, although none have focused specifically on endemic livestock production. The development of producers' associations and capacity building for livestock herders have also received attention in various projects, although once again few projects have focused specifically on endemic livestock producers.

Another critical issue related to livestock production is that of disease control. All of the countries within the sub-region have stated their desire to conduct mass vaccination campaigns against the major epizootic diseases that affect livestock, and to develop and disseminate simple, cost effective and appropriate technologies aimed at improving the health and nutrition of livestock in order to improve reproduction and growth and reduce mortalities. However, few projects have been implemented for livestock health, and in some cases priorities are in conflict with conservation on endemic breeds. For example, disease risk assessment has been used in some programs in order to identify suitable areas for livestock development using more productive exotic dairy breeds crossed with local N'Dama cattle. Furthermore, some disease control methods have significant detrimental impacts on natural ecosystems, including in particular the use

of chemicals and bush clearing for controlling the tsetse fly, which destroys habitat for endemic ruminant livestock.

Management of habitat and natural resources

The baseline for management of natural ecosystems and resources in areas of habitat for endemic ruminant livestock is complex, with many ongoing programs and projects in place throughout the sub-region. Pasture improvement and hydrological management projects are taking place in all four countries, with much of the focus on improving infrastructure (irrigation and water management, increased watering points, improved rural roads and bridges, etc.). Several programs are supporting rural collectives or associations to guide in and participate in infrastructure improvements and resource management, such as the project for Communal Management of Biodiversity (PICCB), and the capacity strengthening program for the Society for Agricultural Development in the Anambe basin (SODAGRI).

Projects and programs for natural resources management are also numerous, many of them linked explicitly to economic development and rural incomes, such as the Project for Sustainable Agricultural Development in Guinean forestry (PRODAD) and the agroforestry component of the Regional Action Plan of Sikasso (PARS). Forest management, including wooded savanna that is the primary habitat for endemic livestock breeds, is the focus of several programs, including the Program of Support for Forestry Sector Development (PADF) in Senegal. However, the link between endemic livestock conservation, improved production techniques for these breeds, and sustainable management of natural ecosystems has yet to be established in these baseline projects, which remain focused either solely on rangeland management of productive landscapes or solely on natural ecosystem conservation in the form of protected areas.

Socio-Economic Policies and Programs and Livestock Markets

Marketing of endemic ruminant livestock in the sub-region is primarily done on a local basis and through local traders using informal networks with poor price and availability information. There are no formally structured export networks at all, and export markets have actually declined in the past decade with the dissolution of livestock marketing boards and other support structures (although small ruminant trade has continued to flourish in some areas, for example between The Gambia, Senegal and Mauritania). Despite the poor performance of livestock markets in the sub-region, particularly for exports, there is actually growing demand for livestock and livestock products, both domestically and internationally. Currently, there is high demand from neighboring countries such as Ghana, Benin, Togo, Nigeria and Burkina Faso for pure breeds of West African endemic livestock to be used for cross-breeding to raise the disease tolerance of their livestock. The Gambia has a long standing program of exporting N'dama bulls to Nigeria for breeding purposes, but other opportunities to meet this demand have yet to be pursued.

Several baseline projects have been implemented to improve market infrastructure, expand and coordinate marketing programs, and otherwise improve the economics of endemic ruminant livestock raising (e.g. the Livestock Services Support Project (LSSP) in The Gambia. In addition, other baseline programs have been initiated to create access to credit and creation of financial associations (PPDR-HG), to promote Rural Micro-enterprises (PROMER), and to establish revenue generating activities related to natural resources management (PLCP). However, no projects have yet targeted integrated revenue generating activities that bring together improved production and productivity of endemic breeds with other income-generating activities based on sustainable use of native habitats. In addition, in order to be successful and sustainable, the project will have to develop economic incentives for farmers and herders to maintain

endemic ruminant livestock in their herds. As demand for these breeds outweighs supply, there is a strong potential for developing economic incentives for *in-situ* conservation, but these must be combined with an integrated program for production and diverse income sources in order to be successful.

Table 1: Summary of baseline funding by outcome (US$)

Outcome	GEF budget	Baseline funding sources	Nature of baseline activities	Baseline funding amount
Outcome 1: Production and productivity of endemic ruminant livestock is sustainably improved	**3,800,000**	IFAD	Rural finance community initiative project	Not available
		FAO	Crossbreeding program to supply high milk yielding cattle to local farmers	Not available
		AfDB	Increasing small ruminant and vegetable production in peri-urban areas	5,720,000
		AfDB	Integrated Livestock Production Project (ILPP)	Not available
		EU	Research and development related to animal health and production (PROCORDEL - Gambia)	Not available
		FIDA, OPEP, BND	Testing of production techniques and strengthening of rural and social infrastructures (PAPE/BGN)	21,930,000
		IDB, BND	Credit development, rural infrastructure, creation of associations and small ruminant production (PDRI)	11,480,000
		FED	Genetic improvement and milk production improvement (PASEL)	9,760,000
		FED, BND	Project to fight against animal trypanosomosis (PLTA)	240,000
		FED	Genetic improvement for milk production; food production research (PROCORDEL – Guinea)	11,960,000
		IDB, OPEP BND	Support for agriculture & animal production; improved infrastructure (roads, water points); promotion of producers organizations	16,500,000
		FAD, GRM	Identification of seed producers and training of farmers in seed production techniques	11,500,000
		CEDEAO, GRM, Local populations	Improve incomes and living conditions of N'dama cattle producers	Not available
			Total baseline funding	**89,090,000**
Outcome 2: Commercialization and marketing systems of endemic ruminant livestock and livestock products are strengthened	**0**	AfDB	Livestock Services Support Project (LSSP)	Not available
		FIDA, BND	Creation of access to credit and creation of financial associations (PPDR-HG)	1,430,000
		FIDA, BOAD	Project to Promote Rural Micro-enterprises (PROMER)	7,420,000
			Total baseline funding	**8,850,000**
Outcome 3: Natural resources in project pilot sites conserved and sustainably	**3,958,00 0**	AfDB, EU, BADEA	Sustainable utilization and management of the water resources of the Gambia River Basin	Not available
		IDB, BND	Pasture improvement and hydrological management (PDRI)	9,620,000

managed for the benefit of endemic ruminant livestock, ecosystem services, and human livelihoods		FIDA, OPEP BND	Participatory land management and agricultural rehabilitation (PRAADEL)	18,200,000
		IDB, Govt. of Guinea	Improve land management and rural development infrastructure (roads, watering points)	11,540,000
		FAD, BND	Hydro-agricultural management, land rehabilitation, maintenance of rural paths and construction of bridges, support for creating rural collectives (PADER-HG)	16,380,000
		FED PIN FED PIR	Natural resources management and rural development; support for implementation of protected areas (AGIR)	21,960,000
		USAID	Implement natural resource management committees; develop management plans; awareness raising and education (PEGRN)	Not available
		FIDA, BND	Project for Sustainable Agricultural Development in Guinean forestry (PRODAD)	12,500,000
		Govt. of Netherlands	Facilitate access to credit for agricultural equipment for reforestation	1,000,000
		Not available	Implement infrastructure for irrigation, potable water and rural roads (Mali)	Not available
		Not available	Village level participatory forest management; pasture improvement; and agroforestry (Regional Action Plan of Sikasso – PARS)	Not available
		IDB, OPEP, GRM	Management of resources to allow for improved production of endemic animals; protection of biodiversity hotspots; improvement of rural roads to facilitate exchanges of endemic livestock (PDRIK)	Not available
		KFW	Equip rural inhabitants with materials to combat land degradation	Not available
		UNDP-GEF Govt. of Netherlands	**Project for Communal Management of Biodiversity (PICCB), capacity strengthening for natural resources management and support for income generating activities**	37,120,000
		Govt. of Netherlands	.1. *Program of Support for Forestry Sector Development (PADF)*	Not available

		FAD, FND	*.2. Revenue generating activities related to natural resources management (PLCP)*	Not available
		BAD, EU BADEA	Organization for the Management of the Gambia River (OMVG); management of water resources and poverty reduction	31,540,000
		FAD, IDB	Society for Agricultural Development in the Anambe basin (SODAGRI); capacity strengthening for agriculture and hydrological management	29,960,000
			Total baseline funding	**189,820,000**
Outcome 4: Legal, policy and institutional frameworks established at the local, national, and sub-regional level for in-situ conservation of endemic ruminant livestock	**1,502,000**	EU	Pan African Control of Epizootics (PACE - Gambia)	1,590,000
		FED, BND	Institutional capacity strengthening for epizootic surveillance and fight against bovine pests (PACE – Guinea)	2,200,000
		IDA, FIDA, AfDB, BND	Improve regulatory, institutional and fiscal conditions and promote decentralized development capacity; establish an efficient system for the transfer of funds to local communities (PACV)	190,000
		Not available	Project of support for decentralized collectives in Mali	Not available
		IDA, GRN Govt. of Netherlands	Improve the living conditions of rural inhabitants and strengthen the capacity of the Ministry of Rural Development	11,060,000
		EU	**Implementation of epidemiological surveillance system; privatization of services to livestock herders; improvement of rural health conditions (PACE – Senegal)**	2,040,000
		World Bank	**Program of Agricultural Services and Support to Producer's Organizations (PSAOP)**	3,090,000
			Total baseline funding	**20,170,000**
Outcome 5: A sub-regional system is established for cooperation, information exchange, and coordinated support for the conservation of endemic livestock	**2,520,000**	GRM, Govt. of Netherlands	Identification of agricultural research activities appropriate to each area of the country (Mali)	8,460,000
			Total baseline funding	**8,460,000**
			Grant Total Baseline Funding	**316,390,000**

4. The GEF Alternative

The GEF alternative builds upon the existing baseline by providing incremental resources to ensure the *in-situ* conservation of endemic ruminant livestock, their unique genetic traits, and the habitat that sustains them, in four West African countries. The project will modify the baseline/business as usual scenario with GEF incremental funding for activities that provide direct global environmental benefits. GEF funding over a 10-year period will permit integrated conservation and sustainable development activities to be developed, implemented, and consolidated. Once consolidated, economic incentives and conditions should exist to attract participants to endemic livestock management, and recurrent costs and other needed inputs for ongoing livestock production and marketing, and habitat and natural resource conservation and management, will be significantly lower and should be met without further GEF support. GEF supported activities will be complemented by co-financing for sustainable development activities necessary to support the realization of global environmental benefits. A significant portion of the co-financing will go to project activities that provide global environmental benefits, notably for breeding programs for endemic ruminant livestock, conservation and sustainable management of critical habitat areas, and strengthened legal and policy frameworks for conservation of endemic breeds.

In addition to the development of a model for *in-situ* conservation of endangered breeds of West African endemic livestock and protection of their habitats in selected priority pilot sites (GEF increment), the project will also incorporate supporting activities on: regional research on genetic diversity of sub-populations (GEF, AfDB and ILRI); *in-situ* breeding programs with community-managed dispersed nucleus breeding hers at the project's priority sites (GEF, AfDB, ITC, national governments); in-situ breeding at existing field research stations (AfDB, ITC, national governments); production and productivity improvement programs with the participation of farmers in the project's priority sites (AfDB, ILRI, national governments, private sector); expanding opportunities for marketing at the national and regional levels (AfDB, national governments, private sector); and legal and policy framework strengthening (GEF and co-financing). Finally, regional cooperation will be enhanced for the coordinated conservation of genetic diversity and the exchange of experiences, most importantly in replicating the model for in-situ conservation of endemic livestock based on the experiences and approaches developed at the project pilot sites and at the national and regional levels (GEF and co-financing).

The GEF alternative will remove policy, institutional, legal, market, technical and financial barriers and constraints to long term sustainable protection and management of endemic ruminant livestock in the sub-region, in order to enable long-term, self sustaining activities to continue after the project implementation period has ended. Government agencies with responsibility for natural resource management and for livestock within the sub-region are generally unable to provide effective support to rural inhabitants in land use planning or management, habitat conservation, or livestock management and production. These institutions are constrained by inadequate personnel, training, and equipment, in particular in rural settings. The project will support the field level activities of these agencies at the project pilot sites and remove barriers to implementation of their mandates through training of personnel, establishing community-based management structures to work with existing government structures, implementing on-the-ground monitoring and evaluation processes for resource management activities, and revising and harmonizing institutional mandates and the policy and legal frameworks that support them, including mainstreaming endemic ruminant livestock conservation into broader development planning.

At the sub-regional level, coordination on livestock management and natural resource conservation is very minimal, with significant impacts due to the highly transboundary nature of livestock herding among the four countries. The project will remove barriers to international coordination and information sharing by working to harmonize national policies on land tenure and transhumance, by coordinating sub-regional markets and

marketing channels, by establishing a sub-regional information network, and by developing ongoing coordination mechanisms.

A lack of information relating to the status and genetic traits of endemic ruminant livestock breeds and specific populations, as well as to habitat and other natural resources conservation and management, constitute a significant barrier to prioritizing actions within the sub-region and to creating effective long-term strategies. Building on the baseline work completed during the PDF-B phase, the project will carry out additional baseline studies on biophysical and socio-economic factors during the first years of the project, in order to confirm and validate existing data and to gather and assess supplemental data as needed. In addition, the project will establish ongoing monitoring and evaluation processes for this data, so that future programs and policies will not face the same informational barriers.

Finally, barriers to efficient production and marketing of endemic ruminant livestock and livestock products are a significant hurdle to the widespread participation of livestock herders in maintaining these breeds. Without competitive economic returns, or a clear understanding of the full cost-benefit comparison of endemic breeds with exotic breeds, livestock herders will continue to pursue strategies of cross-breeding and/or exclusively using exotic breeds. The project will remove economic policy/market barriers and distortions which favor exotic breeds without taking into account their true resource, environmental and labor costs. The project will also remove barriers to improved production and productivity through better feed, water and pasture management, breed improvements, and increased access to credit for endemic livestock producers. In addition, the project will remove barriers to effective marketing by diversifying products, by improving marketing distribution channels, and by eliminating policies, regulations and tariffs that constrain the export of endemic breeds.

The project is designed to be cost effective. Further, it is designed to be consistent with the need to analyse the ongoing and planned future activities of the countries, the African Development Bank, and other donors active in the region. This makes it possible to avoid duplication, isolate the incremental activities necessary to project execution, and to request funding only for the incremental costs associated with project components.

In addition to the GEF contribution, the increment will include a significant amount of co-financing from the African Development Bank (AfDB), the International Livestock Research Institute (ILRI), the International Trypanotolerance Center (ITC), and the Governments of The Gambia, Guinea, Mali, and Senegal. Funding from the AfDB will support a wide range of project activities, as noted in the Project Output Budget. Additional details on the uses of AfDB funding will be available after completion of an AfDB field mission in September 2004.

Funding from the national governments also supports activities under all of the major outcomes of the project. This funding will be primarily in-kind support in the form of personnel and equipment from national and local government agencies which will act as partners in implementation of various activities, and will become catalysts for integrating project objectives and methods into government programs. Funding from the ITC is focused exclusively on the maintenance and running of the cattle and small ruminant Open Nucleus Breeding Scheme in The Gambia and to the N'Dama cattle breeding station at Boke, Guinea. ITC will continue to maintain and run these herds and flocks at the stated level of funding to realize the outputs of Activities 1.3.2: "Improve productivity of pure bred endemic ruminant livestock through participatory selective breeding at specialized centers". This cofinancing from ITC will bring added value and synergies to the GEF-funded Activity 1.3.1: "Improve productivity of pure bred endemic ruminant livestock through establishment of community/association managed dispersed nucleus breeding herds (built upon existing experiences and structures).

As the project executing agency, the International Livestock Research Institute (ILRI) will provide in-kind support, based on its expertise in numerous aspects of livestock conservation and management, to support many of the aspects of the project strategy. The following ongoing activities at ILRI will have direct application to the

project: molecular diversity studies of African cattle, sheep and goats; quantification of market opportunities for indigenous livestock and the identification of institutional constraints to commercialisation and marketing in several sub-Saharan African countries; identification and quantification of producer and consumer preference for alternative livestock genotypes including cost-benefit analysis of alternatives; the development of new methods of evaluating intangible (economic) values for selection decisions; breed surveys; the development of 'domestic animal genetic resources information system' supported by comprehensive bibliography; on-farm characterization and breed comparisons of trypanotolerance in cattle; molecular studies aiming to understanding of mechanisms of host resistance to trypanosomosis; development of optimized cattle breeding schemes for indigenous livestock based on the demands and opportunities of poor livestock keepers in East Africa; and the development of decision-support tools to assist in the identification of policy constraints to the conservation and sustainable use of indigenous livestock, in Africa and Asia.

As the executing agency, ILRI will insure that its technical expertise and knowledge is available throughout the entire period of the project. Besides insuring the overall co-ordination of the project, ILRI will be providing technical and scientific backstopping to activities leading to the five project outputs. ILRI will also play a major role in training and capacity building at the national and regional levels. ILRI experience and knowledge will catalyze the starting-up of activities at country levels, providing a framework for their implementations at field sites as well as guidance throughout the project. ILRI links with the international community including donors, international institution as FAO or regional ones as CORAF or ITC will facilitate linkage of project activities with new ones developed, supported or implemented by these agencies. Finally, an ILRI committee of experts will be established to support all aspects of the project implementation, as noted in the project implementation and execution arrangements.

5. Scope of Analysis

The physical scope of the project is the twelve project pilot sites (four in each country) at which field-level interventions will take place (see Annex 2I – Maps). Within these sites, specific zones for on-the-ground activities will be identified during the first year of the project. The physical scope of the project includes a variety of ecosystem types and agricultural and pastoral systems, as indicated in the Brief.

The temporal scope of the project is the ten-year implementation timeframe. Project benefits, through the removal of existing barriers and the establishment of conditions for self-sustaining actions, will continue to accrue beyond this timeframe. Of course, ongoing country and donor resources will be required to truly sustain the overall project goal of conserving endemic ruminant livestock breeds, their unique genetic traits, and the habitat that sustains them, and the active participation of such entities in the project design and implementation represents a promising sign that this project is the beginning of a long-term process for change within the sub-region.

6. Costs and the Incremental Cost Matrix

The Baseline associated with the project is estimated at US$316,390,000. The GEF Alternative is US$346,478,000. The total Project Cost is US$30,088,000, of which US$10,495,000 is GEF funding (including the PDF-A budget of US$25,000 and the PDF-B budget of US$470,000). These GEF funds have leveraged US$19,590,000, and the ratio of GEF to other financing is 35% to 65%. Costs have been estimated for ten years, the duration of the planned project.

Incremental Cost Matrix

Output	Cost (US$ Millions)	Domestic Benefit	Global Benefit
Outcome 1: Production and productivity of endemic ruminant livestock is sustainably improved	**BASELINE = 89.09**	Baseline projects for livestock production focus on cross-breeding, rural infrastructure, and improved processing, with primary goal being food security and export income, and with most government programs and resources devoted to exotic breeds.	
	Alternative = 99.84	Alternative will significantly increase government support for and emphasis on endemic ruminant livestock breeds, and will build on baseline activities by supporting farmers/herders with increased access to credit, capacity strengthening, and creation of endemic livestock producer's association.	Alternative will decrease cross-breeding of endemic breeds by providing alternative production and productivity improvement options, and will develop pasture, feed and water management strategies and participatory management strategies of benefit to livestock herders throughout sub-region and internationally
	Increment = 9.75 **Of which:** **GEF = 3.80** **Others = 5.95**		
Outcome 2: Commercialization and marketing systems of endemic ruminant livestock and livestock products are strengthened	**BASELINE = 8.85**	Baseline situation is a steady decline of market structures and support for endemic ruminant livestock, with actions limited to local markets (and almost no export markets at all) dependent on local traders using informal networks with poor price and availability information	
	Alternative = 11.40	Alternative will greatly increase market information, strengthen and diversify market distribution channels, and remove barriers to export of endemic ruminant livestock and livestock products	Livestock herders realize profits from endemic livestock raising that reduce incentives for cross-breeding and increase household incomes, thereby reducing pressure on pastures and other natural resources (i.e. native plants and animals) in livestock habitat

	Increment = 2.55 Of which: GEF = 0 Others =2.55		
Outcome 3: Natural resources in project pilot sites conserved and sustainably managed for the benefit of endemic ruminant livestock, ecosystem services, and human livelihoods	**BASELINE = 189.82**	Baseline conditions for management of natural resources (soil, water, vegetation) continues to suffer from increasing pressure coupled with declining norms for resource management; baseline policies and programs continue to remain focused either solely on rangeland management of productive landscapes or solely on natural ecosystem conservation in the form of protected areas.	
	Alternative = 203.09	Alternative improves conservation and management of natural resources, to the benefit of local inhabitants; capacity of local inhabitants to manage resources in communal participatory way is increased	Link is established between endemic livestock conservation, improved production techniques for these breeds, and sustainable management of natural ecosystems, providing a model for replication in the sub-region and elsewhere
	Increment = 13.27 Of which: GEF = 3.96 Others = 9.31		
Outcome 4: Legal, policy and institutional frameworks established at the local, national, and sub-regional level for in-situ conservation of endemic ruminant livestock	Baseline = 20.17	**Baseline policies, laws and regulations favor exotic breeds that generate higher meat and milk production; legislation remains highly sectoral and rarely takes account of biological diversity, genetic dilution, or ecosystem carrying capacities; lack of consultation in creating laws and regulations, as well as the lack of authority and resources to enforce them; low level of cohesion and coordination among the different countries**	
	Alternative = 21.67	Alternative eliminates legal and regulatory gaps that promote inefficient and unsustainable use of resources by governments and local populations both; increases institutional capacities in research and to implement programs at the field level	Alternative aligns legal, policy and institutional frameworks with conservation of animal genetic resources and critical habitats, and increases technical capacity for biodiversity conservation
	Increment = 1.50 Of which: GEF = .86 Others = .64		
Outcome 5: A sub-regional system is established for cooperation, information exchange, and coordinated	Baseline = 8.46	Baseline information sharing and coordination of livestock policies and pastureland management across national borders is very minimal, and no existing programs or projects address this issue specifically	
	Alternative = 10.98	Alternative will establish formalized linkages between resource management agencies in four participating countries, which will benefit sustainable development planning and objectives	Alternative will allow for coordinated efforts to conserve globally significant endemic ruminant livestock, and will serve as a model for regional cooperation that can be replicated in other locals

	Increment = 2.52 Of which: GEF = 1.38 Others = 1.14		
	Baseline = 316.39		
	Alternative = 346.48		
	PDF Funding = .50		
	Total Project = 29.59 [of which GEF will contribute 10.00 and others 19.59]		

ANNEX 2G - PROJECT WORKPLAN

Project Outcomes and Outputs	Years																			
	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Year 7		Year 8		Year 9		Year 10	
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
Outcome 1: Production and productivity of endemic ruminant livestock is sustainably improved																				
Output 1.1: Characterize endemic ruminant livestock and their productive environment/system																				
1.1.1 Rapid rural appraisal and inventory of livestock management practices and genotypes																				
1.1.2 Identification, classification and inventory of the genetic structure of each breed																				
1.1.3 Collect and collate existing information on phenotypes, including local/traditional knowledge																				
1.1.4 Training, updating and reinforcing capacity of national and sub-regional research institutions																				
Output 1.2: Improve management systems for livestock production and productivity (animal health, nutrition, housing, etc.)																				
1.2.1 Identify opportunities for improvement (from outputs of 1.1), built upon existing experiences																				
1.2.2 Test “Best-bet” options through participatory research (linked to improved market development)																				
1.2.3 Train endemic livestock producers at pilot sites to apply improved management techniques																				
1.2.4 Assure regular exchange among project sites at country and sub-regional level on results and lessons learned																				
Output 1.3: Establish genetic improvement systems for endemic ruminant livestock																				
1.3.1 Improve productivity of purebred endemic ruminant livestock through establishment of dispersed nucleus breeding herds																				
1.3.2 Improve productivity of purebred endemic ruminant livestock through participatory selective breeding at research centres																				
1.3.3 Implement measures to manage and control cross-breeding between endemic ruminant livestock and other species																				

1.3.4 Strengthen links with existing endemic livestock selection programmes

Output 1.4: Establish systems for dissemination of information on management practices and genetic/breeding systems

1.4.1 Identify partners for participatory management and breeding information sharing systems

1.4.2 Work with partners to analyze existing information flows and to establish/strengthen information sharing systems

1.4.3 Use information systems to understand management and breeding systems dynamics and trends

1.4.4. Develop mechanisms to disseminate critical management and breeding information

1.4.5 Monitor the performance of new/strengthened information systems

Output 1.5: Identify and demonstrate incentive systems for farmer participation in endemic livestock raising

1.5.1 Conduct opportunity/constraint analysis of existing and potential incentive systems and economic values of endemic ruminant livestock

1.5.2 Demonstrate applicability of project activities to strengthen economic incentives for raising endemic ruminant livestock

1.5.3 Demonstrate applicability of project activities to strengthen social incentives for raising endemic ruminant livestock

1.5.4 Develop security incentives for raising endemic ruminant livestock, through establishment of secure animal identification systems

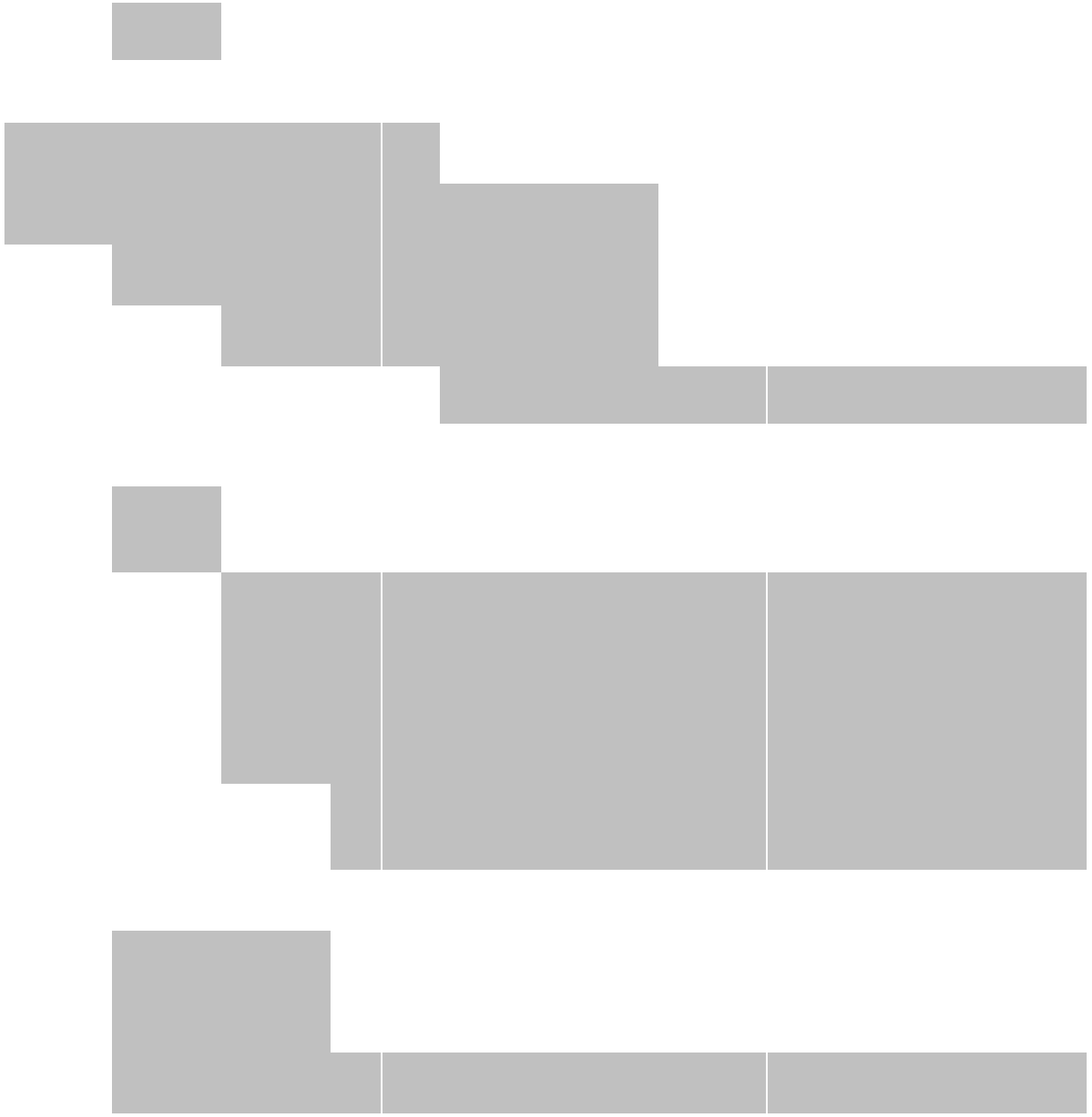
1.5.5 Assess effectiveness, equitability, and socio-economic impacts of demonstration incentive systems, and replicate lessons learned

Output 1.6 Strengthen capacity for participatory community management of livestock production

1.6.1 Identify, strengthen and/or reorient existing village-level endemic livestock producers' associations

1.6.2 Work with existing programs in the sub-region (PACE/CAPE) to train and equip veterinary assistants

1.6.3 Work with existing programs and organizations to facilitate the participation of women's groups



Outcome 2: Commercialization and marketing systems of endemic ruminant livestock and livestock products are strengthened

Output 2.1: Identify marketing opportunities, including niche markets for livestock, livestock products, and breeding material

2.1.1 Conduct economic analysis of endemic ruminant livestock raising (breeds, traits, functions, services)

2.1.2 Analysis of market structures and channels

2.1.3 Identify market opportunities for livestock and livestock products locally, regionally, and globally

2.1.4 Identify market constraints for endemic livestock and livestock products, and identify market threats

Output 2.2: Develop marketing, distribution and processing infrastructure for endemic ruminant livestock and livestock products

2.2.1 Identify partners for infrastructure design and development

2.2.2 Conduct needs analysis on infrastructure and processes

2.2.3 Support infrastructure establishment (market outlets, transportation, slaughterhouses, etc.)

2.2.4 Implement activities to address market constraints for endemic livestock

2.2.5 Support strengthening of existing systems for control of livestock related diseases

2.2.6 Organize endemic livestock fairs at contests at the project pilot zone and national levels

Output 2.3: Implement a knowledge-management decision support system for market information

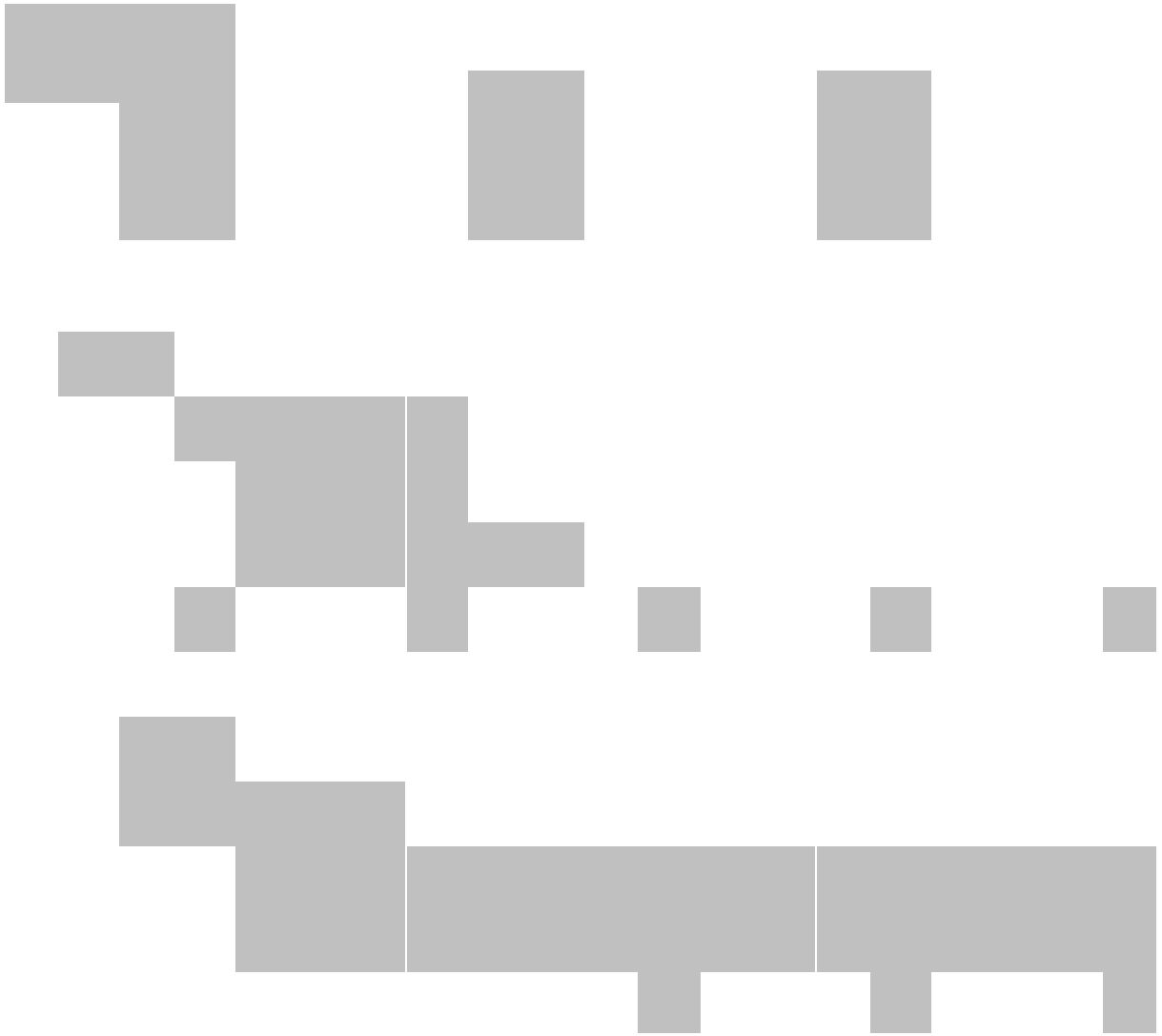
2.3.1 Identify partners for development and participation in market information sharing system

2.3.2 Work with partners to analyze existing information flows and to establish/strengthen information sharing systems

2.3.3 Use information systems to understand market systems dynamics and trends

2.3.4. Develop and implement mechanisms to disseminate critical market information

2.3.5 Monitor the performance of new/strengthened information systems



Output 2.4: Identify, develop and support community-based livestock marketing associations

2.4.1 Identify and analyse existing marketing associations

2.4.2 Catalyze where required the formation of new marketing associations

2.4.3 Link with other activities of the project, and with other partner/support institutions, to strengthen existing and new associations

Output 2.5: Development of credit schemes for endemic ruminant livestock producers and traders

2.5.1 Assess current priorities for access to credit and current constraints on access to credit

2.5.2 Analyze previous and existing credit schemes within the sub-region

2.5.3 Select existing credit partners (public and private) and develop and test credit schemes

2.5.4 Provide technical support to farmers' associations, market participants, and other credit recipients

Outcome 3: Natural resources in project pilot zones conserved and sustainably managed for the benefit of endemic ruminant livestock, ecosystem services, and human livelihoods

Output 3.1: Establish systems of measurement and assessment of natural resource use

3.1.1 Determine critical natural resource indicators with input from local communities

3.1.2 Determine project pilot site boundaries, identify and classify ecosystem types, and assess basic socio-economic and natural resource baseline information

3.1.3 Analyze existing natural resource use patterns and techniques

3.1.4 Collect and analyze quantitative and qualitative data on migration/transhumance patterns and trends

Output 3.2: Strengthen capacity of local inhabitants to manage livestock habitat

3.2.1 Strengthen local community skills for agro-sylvo-pastoral management and endemic livestock conservation

3.2.3 Training and support of local resource users in decision making processes and negotiation

Output 3.3: Develop and implement project site-level landscape management planning processes and institutional structures

3.3.1 Assess and harmonize existing development and management practices and policies

3.3.2 Provide training to community-based resource management structures and conservation institutions

3.3.3 Develop and implement community wide resource management frameworks, including conflict management mechanisms

Output 3.4: Establish locally adapted and supported norms and regulations for the sustainable management of habitat and resources

3.4.1 Analyze existing communal grazing norms and strengthen and/or develop improved norms

3.4.2 Improve management of forest resources

3.4.3 Improve management of forage resources

3.4.4 Improve management of hydrologic resources

3.4.5 Improve management of soil resources

3.4.6 Improve management of agricultural lands

Output 3.5: Develop and test production systems combining endemic ruminant livestock raising and compatible natural resource use at project pilot sites

3.5.1 Assess compatibility of existing natural resource use strategies with livestock production

3.5.2 Develop and test combined economic production systems at project pilot sites

3.5.3 Support local communities in the promotion of markets and local consumption of agroforestry

Outcome 4: Legal, policy and institutional frameworks established for in-situ conservation of endemic ruminant livestock

Output 4.1: Harmonize national and sub-regional policies and laws for conservation, promotion, trade, and management (including land tenure) of endemic ruminant livestock and livestock products

4.1.1 Participatory review of existing policies and laws

4.1.2 Revise, test and evaluate policies and laws, at project pilot zone level and national level

4.1.3 Develop regulations and enforcement mechanisms to support revised policy and laws

4.1.4 Translate and publish revised policies, laws, and regulations

4.1.5 Ongoing participatory review and fine-tuning of policy, legislative, and regulatory changes

Output 4.2: Develop and/or strengthen national and sub-regional policies and incentives in support of sustainable resource management related to endemic ruminant livestock

4.2.1 Develop policy/economic decision support tool at sub-regional level to study existing and potential subsidies, incentives/disincentives, and other financial mechanisms

4.2.2 Demonstrate fair valuation of natural ecosystem services

4.2.3 Identification of incentive options following demonstration of the total economic value of endemic livestock raising

Output 4.3: Strengthen local capacity to participate in the creation and the application of policies, laws, and regulations for the management of endemic ruminant livestock and their habitat

4.3.1 Conduct local stakeholder analysis and engage relevant interest groups/stakeholders

4.3.2 Test/evaluate/adapt mechanisms for developing and implementing actions at the local level

4.3.3 Develop mechanisms for replicating local-level decision-making processes at other rural communities

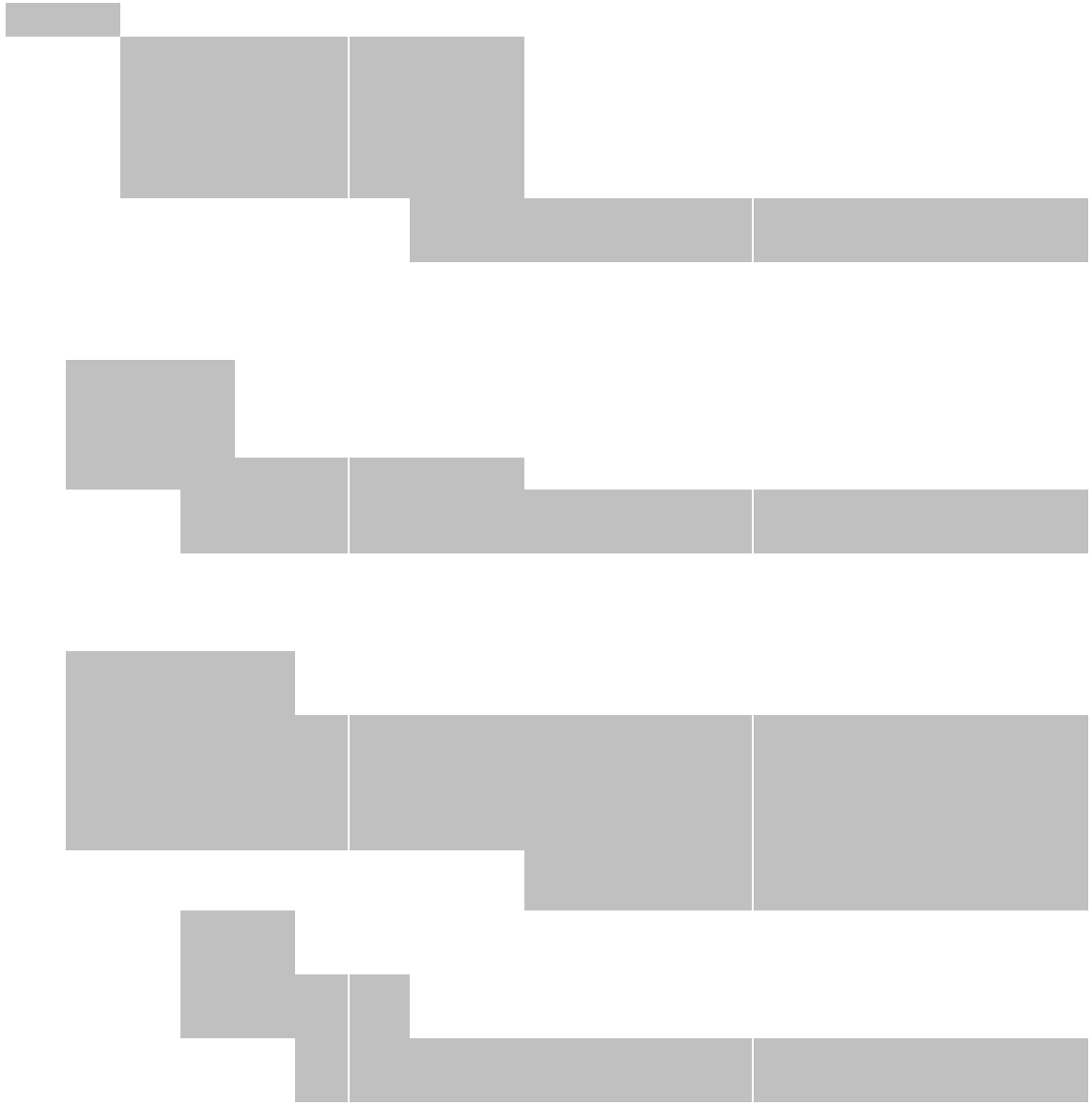
Output 4.4: Develop mechanisms for supporting local decisions and actions

4.4.1 Perform function analysis for professional associations, grassroots organizations, and others

4.4.2 Strengthen capacity of existing national and sub-regional research and extension centers

4.4.3 Test, evaluate and fine-tune best-bet technical services and information delivery systems

Outcome 5: A sub-regional system is established for cooperation, information exchange, and coordinated support for the



conservation of endemic livestock

Output 5.1: Develop mechanisms for information sharing and lessons learned among project participants, and for adaptive management based on lessons learned during project implementation

5.1.1 Conduct annual national level joint learning workshops for key stakeholders

5.1.2 Conduct annual sub-regional level joint learning workshops for key stakeholders

5.1.3 Disseminate the outputs of the national and sub-regional workshops

5.1.4 Establish information sharing with UNEP-GEF project "Development and application of decision-support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives"

5.1.5 Organize and disseminate information gathered from the project (lessons learned), and use information to support adaptive management as part of the project implementation

Output 5.2: Establish and operationalize long-term sub-regional networks for information exchange

5.2.1 Establish a sub-regional information-sharing network on endemic ruminant livestock management

5.2.2 Support the development of direct information sharing among livestock breeders associations

Output 5.3: Formalize mechanisms and agreements for coordination among institutions and associations in the sub-region involved in the management of endemic ruminant livestock

5.3.1 Conduct studies on existing and potential cooperation and partnership options

5.3.2 Grant formal recognition and legal status to professional organizations of endemic livestock breeders and operators

5.3.3 Carry out consultations within the sub-region to identify and agree upon critical priorities for management of endemic livestock and habitats

5.3.4 Formally establish and operationalize a network of all institutions and associations in the sub-region involved in the

management of endemic livestock

5.3.5 Facilitate bilateral and multilateral management agreements and cooperative projects

Output 5.4: Enable replication of selected site level activities (awareness raising/education and lessons learned) from twelve primary project pilot sites to eight secondary project pilot sites
5.4.1 Provide public education and awareness raising on project goals, strategies, and ongoing successes for key stakeholders at secondary sites
5.4.2 Carry out assessment of successful site level strategies and best practices at primary project sites
5.4.3 Conduct outreach and coordination activities with existing sustainable development programs at secondary pilot sites; explore and formalize mechanisms for applying lessons learned
5.4.4 Implement training programs in applying lessons learned at secondary pilot sites; and establish ongoing information sharing mechanisms

Output 5.5: Develop uniform processes, and agree upon support for, a long-term monitoring system for genetic, ecological, entomological, and epidemiological analyses

5.5.1 Define genetic, ecological, entomological and epidemiological factors for ongoing monitoring

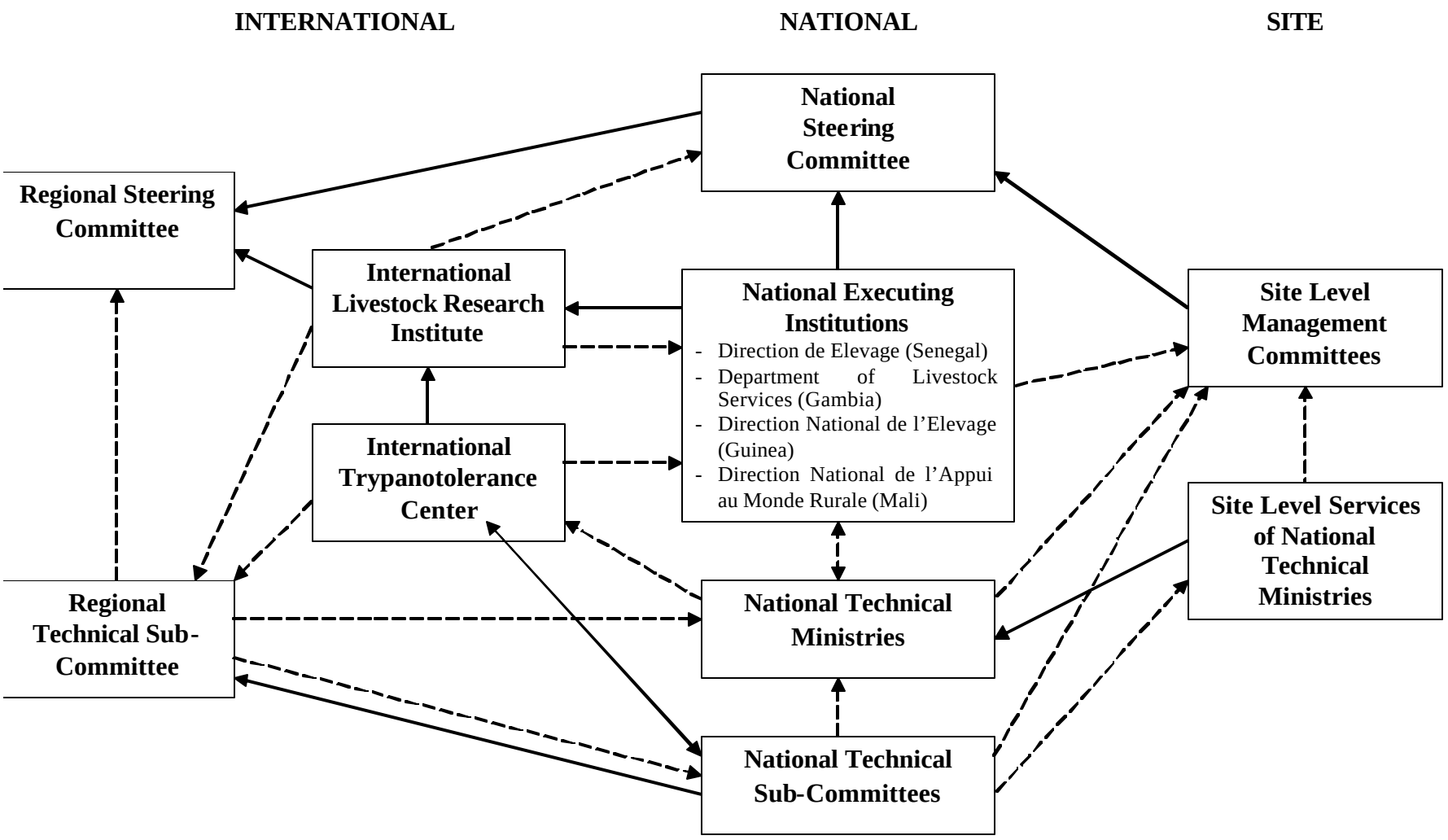
5.5.2 Evaluate existing monitoring and information management systems

5.5.3 Establish system for ongoing monitoring at project pilot zones (using GIS and other tools)

Annex 2H: Project Organizational Structure

→ Indicates Reporting

⇢ Indicate Advisory



ANNEX 2I: Maps of Project Area and Pilot Sites

See attached file for maps.

ANNEX 2J: Description of Country Conditions and Project Pilot Sites

SECTION 1 – PROJECT PILOT SITES

Table 1: Human and geographic area information for project pilot sites (Primary Sites; Secondary Sites)

Project Pilot Sites	Site Category	Total Area of Pilot Site (ha)	Communities/ Sub-Prefectures Covered[1]	No. of Villages/ Districts [2]	Human Pop.	No. of Households	No. of livestock holders	No. of cattle holders	No. of sheep holders	No. of goat holders
GAMBIA										
Niamina East	Sedentary agro-pastoral and transhumance	28,490					1,163	534	586	643
Kiang West	Sedentary agro-pastoral	58,599					1,892	1,022	1,553	1,514
Nianija	Sedentary agro-pastoral and transhumance	3,954					709	500	363	709
Sami	Sedentary agro-pastoral and transhumance	41,895					1,867	1,390	945	1,278
Kombo East	Sedentary agro-pastoral	21,121					2,143	528	608	1,515
GUINEE										
Gaoual	Sedentary agro-pastoral and transhumance	550,800	Kounbia et Kounsitel	19	43,692	6,562	2,104	1,618	1,245	1,569
Dinguiraye	Sedentary agro-pastoral and transhumance	347,100	Dinguiraye Centre Kalinko-Selouma	37	58,820	10,784	3,905	3,853	2,821	2,417
Beyla	Sedentary agro-pastoral and transhumance, divided along ethnic lines	313,700	Moussadou Samana Beyla Cent Djaraguérela	26	38,385	5,555	3,003	2,878	1,684	1,063
Mandaina Siguiri	Sedentary agro-pastoral	389,500	Balandou Dialakoro Doko Bankon	41	99,300	6,222	4,816	4,446	1,955	1,891
Faranah et Mamou	Sedentary agro-pastoral and transhumance (incl. transfrontier)	234,500	Marelle et Ourékaba	19	31,900	6,536	1,307	1,243	604	618

MALI										
Madina Diassa	Sedentary agro-pastoral	160,000	Gouanan	35	18384	2776				
Manankoro	Sedentary agro-pastoral and transhumance	360,000	Sibirila	25	14012	2456				
Sagabari	Sedentary agro-pastoral	587,000	Gouadoudou1	17	16980	1570				
Touseguela	Sedentary agro-pastoral and transhumance	108,000	Tousseguela et Kolosso	18	10,110	1,060				
Koundian	Sedentary agro-pastoral	150,000	Koundian	22	9873	1545				
SENEGAL										
Bandafassi	Sedentary agro-pastoral	350,400	Bandafassi		16,401	7,028	2,247			
Wassadou	Sedentary agro-pastoral	37,700	Pakour	61	12,758	4,847	1,375			
Tenghori	Sedentary agro-pastoral	30,200	Tenghori	34	13,410					
Médina Yoro Foula	Sedentary agro-pastoral	65,600	Médina Yoro Foula	94	11,281	6,044	1,764			
Ndiamacouta	Sedentary agro-pastoral	112,600	Boungkiling	97	21,879	7,335	2,710			

[1]. Communes Couvertes (Mali); Sous-prefectures (Guinea, Senegal)
[2]. Districts (Gambia, Mali), Villages (Guinea, Senegal)

Table 2: Livestock populations at project pilot sites (Primary Sites; Secondary Sites)

Project Pilot Sites	No. of endemic cattle	No. of endemic sheep	No. of endemic goats	No. of exotic cattle	No. of exotic sheep	No. of exotic goats
GAMBIA						
Niamina East	TBD	TBD	TBD	TBD	TBD	TBD
Kiang West	TBD	TBD	TBD	TBD	TBD	TBD
Nianija	TBD	TBD	TBD	TBD	TBD	TBD
Sami	TBD	TBD	TBD	TBD	TBD	TBD
Kombo East	TBD	TBD	TBD	TBD	TBD	TBD
GUINEE						
Gaoual	75,000	9,500	11,000	TBD	TBD	TBD
Dinguiraye	59,045	8,800	6,630	TBD	TBD	TBD
Beyla	28,620	8,840	5,390	TBD	TBD	TBD
Mandaina Siguiri	50,000	10,000	6,500	TBD	TBD	TBD
Faranah et Mamou	32,400	5,500	5,400	TBD	TBD	TBD
MALI						
Madina Diassa	11,500	6,000	6,000	2,000	0	0
Manankoro	3,000	9,000	9,000	7,000	0	0
Sagabari	6,000	5,000	5,000	0	0	0
Touseguela	12,000	4,000	4,000	4,000	500	500
Koundian	9,800	1,300	1,300	1,050	3,950	3,950
SENEGAL						
Bandafassi	23,500	6,100	4,200	TBD	TBD	TBD
Wassadou	31,000	49,000	55,000	TBD	TBD	TBD
Tenghori	21,600	5,300	23,000	TBD	TBD	TBD
Médina Yoro Foula	70,000	44,000	45,000	TBD	TBD	TBD
Ndiamacouta	50,000	25,000	27,000	TBD	TBD	TBD

A. The Gambia Project Pilot Sites

This section discusses the characteristics of the three primary sites selected for the project (Kiang West in Lower River Division, and Niamina East District and Nianija Districts both in the Central River Division), as well as the two secondary sites (Kombo East in Western Division and Sami District in Central River Division). Additional statistical details on these sites are provided in Tables 1 and 2.

(1) Kiang West

Keneba is a small village located in the Kiang West District of the Lower River Division. It is considered as a remotely situated area and is located about 30 km from the main highway. It is one of 5 satellite communities in the area and has a long history of collaboration with research institutions. Both the Medical research Council (MRC) of Great Britain and the International Trypanotolerance Centre (ITC) have field stations in Keneba. The MRC which conducts research on malaria and particularly the effects of malaria on pregnant women, have a well-equipped laboratory in the village.

There is also the Kiang West National Park nearby which is the largest national park in The Gambia with an area of about 11,500 ha. The park is reported to contain an impressive range of fauna and aviflora (over 305 species) as well as a number of distinct biotypes (NBSAP, 1999). The park is jointly managed by government and the surrounding communities and is intended to serve as a future model for co-management of natural resources.

Keneba has a population estimated in 1993 at 1, 612 and the population of the district in which the village is located in was also estimated at 13, 479 persons.

The rainfall in Keneba area is between 700 –800 mm per year and the length of the growing period is ranges from 120 to 135 days in a given year.

The vegetation around Keneba and its environs is considered as one of the thickest in the entire country consisting of dry deciduous woodland and Guinea Savannah. There are also extensive mangrove creeks in the area. As a result of the thick vegetation, the tsetse populations in the Keneba area are considered very high. For many years and until recently, this part of the country provided a constant supply of fuelwood to the Greater Banjul Area. However, the vegetation has been modified by bush fires, which occur annually in this part of the country during the long dry season.

The landscape consists of colluvial slopes and the middle part of crests of the plateau. The topography is flat and gently rolling plains. The soils of the uplands are generally shallow soils with stone or iron pan formations dominating the top layers. Because of the shallow soils, soil erosion is high and crop yields are generally low. The landscape is dominated by rangelands providing fodder for livestock. However, bushfires are rampant in the area during the dry season and destroy most of the fodder and grasses. The combination of bushfires and heavy exploitation of the woodlands for fuelwood has heavily modified the environment in the past couple of decades.

The major economic activity of Keneba is farming. The most common grown crops are groundnuts, millet and sorghum. Livestock farming is also an important economic activity with the village having a cattle population of 14, 369 cattle. Game hunting is popular in the communities within the area given the area's richness in wildlife.

(2) Niamina East District

Niamina east district is located in the eastern part of the Central River Division (CRD-S) and the village of Misera, has a population of 153. The district has a population of 15, 402.The district has 53, 003 cattle, 30, 583 goats and 22, 053 sheep.

Rainfall in Niamina east District averages between 650 to 750 mm per annum. The length of the growing period falls between 12- - 135 days in the year.

The landscape consists of outer zones of the plateau on the uplands which slope gently towards colluvio-alluvial areas of swamplands which are considerably vast in the area. The soils of the uplands consist of deep, well-drained sandy soils, which are susceptible to erosion. Within the swamps and the floodplain areas, the soils consist of heavily textured soils with high water retention activities.

The natural vegetation consists of the Open Savanna characterised by open spaces with tall to medium grasses and few trees interspersed between the grasses. The natural vegetation has been heavily modified in this district due to agricultural mechanization. An earlier project (The mixed farming project) had targeted this area as the maize breadbasket of the country.

Livestock farming is one of the leading economic activities of Niamina East District. The area has traditionally been a cattle-rearing district and has a cattle population of 2, 549 and along with sister districts (Niamina West, Niamina Dankunku) it has one of the highest cattle populations in the country. During the dry season, because of the abundant riverine vegetation in the swamps, the area welcomes huge numbers of migratory cattle from other districts who move into the area in search of feed and water.

Rice cultivation is another major economic activity in Niamina east district. The district has seen many irrigated rice development projects in the past and there are still a number of such schemes in operation. Due to the competing demands and uses for the lowlands between livestock farmer and crop farmers (rice), there are often conflicts between the two.

(3) Nianija

Nianija is a district located in the northern part of Central River Division. The district has a population of 6, 439 while the Division has a population of 67, 779.

The district has a cattle population of 6, 564 with the division CRD –North having a cattle population of 37,094, goats 22, 978 and sheep 20, 957. Livestock farming is an important activity in the district.

Rainfall in Nianija is the lowest in the entire country with a yearly average of about 600 mm. The district experiences frequent drought spells in most years with the length of the growing period slightly less than 120 days in the year.

The landscape of the area consists of the outer and inner zones of the plateau, drainage ways and depressions between the plateau formations. The soils consist of deep and well drained in the inner plateau with shallow sols dominating the outer zones.

The natural vegetation of the area consists mostly of open Savanna with few trees interspersed in between with tall to medium grasses dominating.
Major economic activities

Rice cultivation in the swamps is another major preoccupation of the population in the area.

(4) Kombo East

The Pirang site is located in the Kombo East District about 55 km east of Banjul in Western Division administrative region. The district in which the site is located has a total human population of 21, 028 persons with a cattle population of 3, 05 9 exclusively made up of the local N'dama breed. There are 40, 512 cattle, 41, 931 goats and 12, 132 sheep in the Division and has the third largest concentration of cattle and small ruminants in the country.

The rainfall in this area is generally in the range of 800 mm and above in a given year. However as in other parts of the country, the rainfall pattern has been over the years. The area has the longest growing period of the entire country at 135 days or more in a given year.

The natural vegetation consists of the Guinea Savannah type. As the site is located within the most humid region of the country, the vegetation is characterised by a more dense type of vegetation with wooded areas of medium to tall trees interspersed with short to medium grass species. The natural vegetation has been heavily modified by human activities such as settlements and farming activities.

The landscape of the area is slightly rolling and occupies the middle to upper parts of colluvial slopes. On the uplands, the soils are generally sandy in texture, are deep and well drained and are generally deep soils. The sandy nature of the upland soils makes them generally of low inherent fertility. The lower part of the landscape consists of tributary or inland valleys and floodplains bordering the tributary of the River Gambia. In the tributary valleys, the vegetation consists of dense stands of oil palms (*Elaeis guineensis*). Within the floodplains, the vegetation consists mainly of mangroves. The soils of the tributary valleys consist of mixed hydromorphic soils consisting of low-activity clays, which are generally poorly drained and are of moderate fertility levels. The soils of the floodplains are clay soils that are poorly drained and saturated with water during most parts of the year.

The forest resources consist of open access forests and a nearby Forest Park. The open access forests are open to the general public and are used for grazing, fuelwood collection, hunting and other activities. The open access forest areas are also heavily encroached upon for farming activities and as a result, they have been heavily degraded over the years.

The major economic activity centers around agriculture. Crop farming and livestock husbandry are important activities in the area. Due to the area's proximity to Banjul and other urban centres, there is a lot of intensive vegetable gardening in the area during the dry season as well as a number of well-established fruit orchards. In recent years, there has been a massive establishment of fruit tree orchards in the area given the areas favourable climate and closeness to the urban growth centres. The conversion of farmlands into orchards is the biggest change in land use systems in the area. As a consequent of this, grazing area for limited is becoming limited and this can have major consequences for livestock grazing in the area unless the farmers in the area adopt more intensive forms of livestock production.

There is also some limited amount of fishing activities and there is a history of commercial shrimp framing in the area. A major road serves the area with a network of secondary roads.

(5) Sami District

Sami district is located in the northern part of the Central River Division (CRD-N) and has a population of 16, 073. The district has a cattle population of 18, 707 with livestock farming being an important activity in the district. Due to the proximity of Northern Senegal, there is a lot of in-migration of cattle from Senegal into the district.

Rainfall in Sami averages between 650 to 750 mm per year. The length of the growing period falls between 120 to 135 days in the year.

The landscape of the area consists of sloping hills corresponding to outer zones of the plateau with many dissected valleys and depressions between them. The top of the plateau contain mostly shallow rocky soils which are cultivation but mostly confined to grazing by livestock. Major economic activities

Livestock farming is an important economic activity in Sami. Crop farming is mostly confined to the slopes of the plateau.

B. Guinea Project Pilot Sites

This section discusses the characteristics of the three primary sites selected for the project (Gaoual in Maritime Guinea, and Dinguiraye and Beyla in Upper Guinea), as well as the two secondary sites (Mandiana/Siguiri in Upper Guinea and Faranah/Mamou in Central and Upper Guinea). Additional statistical details on these sites are provided in Tables 1 and 2.

(1) Gaoual

Le site 1 est caractérisé par un climat de type tropical guinéen (zone de Boké) évoluant vers climat de type tropical de montagne (Télimélé) et vers un climat tropical sub-soudanien relativement sec vers le Nord (zone de Koundara). La pluviométrie oscille entre 1200 mm à Koundara et 3500 mm par an à Boké.

Dans la zone de Boké le relief est constitué de plaines hydromorphes sur le littoral de plaines hydromorphes temporaires, de plaines exondées à sol faiblement ferralitique et de plateaux cuirassés vers le Fouta Djallon (Bowés) s'étendant vers la partie occidentale de la préfecture de Télimélé qui occupe une position de transition entre le Fouta-Djalon et la Basse Guinée.

La préfecture de Gaoual occupant la même position que Télimélé, comprend des zones montagneuses à l'Est et des plateaux gréseux de faibles altitudes (300 à 500 m). Ces plateaux cèdent la place dans la partie centrale et septentrionale à un secteur moins élevé s'étalant vers le Nord et rejoignant une zone de plaine qui constitue un ensemble favorable, aussi bien pour l'agriculture que pour l'élevage.

Au niveau de Koundara, plus de 60% du relief est constitué de plaines inondables en saison pluvieuse. En effet, l'altitude varie de 50 m à 500 m dans la zone des plateaux du Badiar.

Les plateaux bowalisés de la zone sont souvent aérés par des plaines que traversent les affluents des fleuves côtiers (Cogon; Tominé, Tinguilinta, Fatala) ce qui les rend très propices à l'élevage. Cependant, dans la partie Nord du site (Koundara) la plupart des rivières, marigots, ruisseaux, sources, étangs sont temporaires.

Dans l'ensemble, la dégradation du couvert végétal est inquiétante (savanes arborées ou arbustives à côté des forêts-galeries le long des cours d'eau).

Du point de vue socio-économique, la zone est caractérisée par la présence de grandes potentialités agro-pastorales et minières (présence de la CBG à Boké) ; dont l'enclavement limite les possibilités d'exploitation. Les ethnies dominantes sont les soussous (vers le littoral) qui pratiquent l'agriculture et les peuhls éleveurs.

En matière d'élevage, il est à noter que c'est dans le site 1 que se trouve la zone du berceau de la race N'Dama. Ce site renferme aussi la plus grande préfecture d'élevage du pays (Gaoual). Cette préfecture compte à elle seule 288.542 bovins soit 10% du cheptel national et 43% par rapport aux 3 autres préfectures du site. L'effectif moyen au niveau de chacune de ces préfectures avoisine 100.000 têtes de bovins. C'est dans ce site que l'on rencontre aussi des éleveurs possédant un grand cheptel dont l'effectif dépasse 500 têtes.

(2) Dinguiraye

Le site 2 s'étend du versant Est du Fouta Djallon vers la Haute Guinée. Il est marqué par un climat tropical de montagne (Tougué), un climat de transition entre le type tropical de montagne et tropical sud-soudanien.

Le relief, essentiellement montagneux dans la partie Ouest du site, se transforme en plateau fortement disséqué dont le sommet est généralement occupé par des bowés (partie centrale). La zone est arrosée par de petites rivières rejoignant le fleuve Bafing, principale affluent du Fleuve Sénégal ; vers Dinguiraye, ces rivières se jettent sur le fleuve Tinkisso (bassin du Niger).

La végétation naturelle est assez dégradée donnant lieu à de grands espaces dénudés régulièrement détruits par les feux de brousse. Dans l'ensemble, au niveau du site, la savanisation est de plus en plus prononcée. L'exploitation forestière et les feux de brousse menacent sérieusement le couvert végétal.

L'économie au niveau de ce site repose essentiellement sur l'agriculture et l'élevage. Spécifiquement pour Dinguiraye, le secteur minier aurifère constitue une perspective d'avenir prometteuse -émergence d'une exploitation industrielle de l'or à côté des pratiques traditionnelle. Cependant, si ces exploitations ne sont pas bien gérées, elles constituent de graves menaces pour la destruction des habitats des animaux. Dans l'ensemble, la zone est faiblement intégré dans le tissu économique du pays à cause de son enclavement.

Le site est une région d'élevage de bovins, ovins et caprins pratiqué selon un système traditionnel qui associe une petite transhumance. Ces mouvements qui s'effectuent sans grande surveillance, engendrent souvent des conflits entre éleveurs et cultivateurs de bas-fonds. .

Au niveau de ces site, la préfecture la plus peuplée en bovins est Dinguiraye, avec 155 667 têtes (soit 69% du cheptel du site).

(3) Beyla

Le site 3, entièrement situé dans la zone pré-forestière, s'étend des grandes plaines savanières de la Haute Guinée (au Nord) à la zone nette de transition entre la savane pastorale du Nord et la forêt humide au Sud. Il occupe une position de carrefour entre la Haute Guinée et la Guinée forestière le long de la frontière avec la Côte d'ivoire.

Le climat tropical du type sub-soudanien au Nord au climat sub-équatorial guinéen au sud, avec une pluviométrie moyenne de 1500 mm. Le site est dans l'ensemble très arrosé avec les principaux sous-bassins du Niger (Milo, Djon, Baoulé, etc.). Il se caractérise aussi, du point de vue relief, par la présence de massifs montagneux (Simandou) et de multiples enclavés crées par la configuration du réseau hydrographique.

Dans le site, on note la présence d'un bassin diamantifère dont l'exploitation tant artisanale qu'industrielle cause des dégâts sur l'élevage (accidents dus à l'ouverture des trous de mine).

La population , cosmopolite au Nord (Toronké, Kissi, Kouranko), est essentiellement constituée de Koniakés au Centre (zone de Beyla) et de Guerzé au Sud. A côté de ces groupes ethniques, on note la présence de poches de peuhls essentiellement éleveurs. La population agricole est marquées par l'importance de la riziculture, celle-ci bénéficie d'une tradition de culture attelée qui se développe de plus en plus.

A Kérouané, l'élevage est surtout important dans les zones de Damoro, Sibilibaro et Soromaya qui compte à elles seules près de 70% du cheptel bovin. Cet élevage représentant une activité essentielle, est ici un moyen de thésaurisation et de sources de revenus.

La zone de Beyla quant à elle, bénéficie d'une tradition pastorale ancienne impulsée par le commerce du bétail vers d'autres zones (zones forestières frontalières avec la Côte d'Ivoire). Elle renferme à elle seule plus de 51% du cheptel bovin de la Guinée forestière. La présence d'éleveurs du Ouassoulou (région géographique commune à la Guinée et au Mali) et l'abondance de la végétation herbeuse ont influé sur le développement de l'élevage. Les pénuries alimentaires saisonnières sont dans l'ensemble très courtes (décembre - janvier).

L'importance de l'élevage de la zone et ses possibilités de développement ont amené le gouvernement à mettre en place d'importants projets à volet élevage (CAE de Famoïla, PRODABEK).

Au niveau du site, la destruction abusive de l'habitat des animaux (champs de mines de diamant et la pratique des feux de brousse pour la chasse traditionnelle des aulacodes), et l'arrivée massive des éleveurs de la Sierra Léone et du Libéria, crée un problème de gestion des terroirs et d'intégration et de stabilisation des éleveurs.

(4) Mandiana/Siguiri

Le site 4 comprenant les préfectures de Mandiana et de Siguiri occupe la partie Nord-Est du pays. Il présente une importante frontière avec la République du Mali au Nord et la Côte d'Ivoire à l'Est. Cette

position géographique lui confère un climat tropical sud-soudanien, très enclins à la désertification. Avec une pluviométrie moyenne de 1100mm au Nord et de 1600mm au sud.

L'harmattan, vent sec et frais, souffle avec force de décembre à février ; il est relayé par l'Alizé continental, chaud et sec de mars à avril.
Le relief est marqué par deux grands ensembles : les plaines fluviales (Niger, Tinkisso, Sankarani) et les plateaux inférieurs. Les plaines sont très favorables à l'agriculture et à l'élevage.

Du point de vue hydrographie, le site est caractérisé par la présence des bassins des fleuves Niger et sénégal. Dans l'ensemble, on note une bonne répartition spatiale des cours d'eau, mais l'étiages est très marquée en saison sèche, allant jusqu'au tarissement complet de certaines rivières affluentes ; ce qui pose un problème d'abreuvement des animaux durant cette période. Des inondations imprévisibles sont fréquentes dans certaines zones te limitent l'intérêt agricole des terres.

L'économie repose essentiellement sur l'agriculture, les mines d'or et le commerce. La zone offre de grandes potentialités pour la culture du coton (Compagnie Guinéenne de Coton). Les gisements aurifères se retrouvent un peu partout et l'exploitation traditionnelle est pratiquée depuis l'Emplire du Mali. Toutefois, une industrialisation de cette exploitation se met en place avec la présence de grandes sociétés (SAG, AGF).

La population quasi homogène est essentiellement constituée de malinké, avec quelques poches de peuhls. La langue de communication est le malinké.

Au niveau du site, la pratique de l'agriculture extensive et le raccourcissement des temps de jachère entraîne l'épuisement durable des sols. L'environnement se trouve progressivement dégradé sous l'influence accrue des feux de brousse, des cultures sur brûlis et de la déforestation.

Dans l'ensemble, le site est favorable à l'élevage. Les plaines offrent de vastes pâturages naturels, mais en zone de plateau, les animaux sont soumis au manque d'eau et de pâturage durant la saison sèche. C'est pourquoi on observe des mouvements de troupeaux entre les pâturages en saison sèche et ceux des plateaux libres en hivernage.

Ce 3ème site compte en moyenne 140 000 têtes de bovins au niveau de chacune de ces deux préfectures ; ce qui constitue près de 28% du cheptel bovin de la région de la Haute Guinée. La menace sur le bétail endémique dans la zone est surtout due à l'introduction incontrôlée des zébus à partir de la république du Mali et à la destruction de l'habitat des animaux (champs de mines et feux de brousse).

(5)Faranah/Mamou

Le 5ème site s'étend des contreforts Sud et Sud-Est du massif du Fouta Djallon, jusqu'à la limite sud de la région naturelle de la Haute Guinée. Il occupe de ce fait une position de transition entre la Basse Guinée, l'arrière pays-continental et la Guinée forestière en incluant le bassin du Haut Niger.

Dans la zone de Mamou, le climat tropical est adouci par l'altitude d'un relief caractérisé par l'alternance de Hauts plateaux, de dépressions et de bas-plateaux. Dans celle de Faranah, limitrophe à la Guinée forestière, le climat est du type sub-soudanien. La pluviométrie moyenne est de 1700 mm.

Trois grands fleuves d'un intérêt national et sous-régional, prennent leurs sources dans ce site ; il s'agit du Konkouré, du Bafing (affluent du fleuve Sénégal) et du Niger.

La population humaine du site est issue d'un mélange de plusieurs groupes ethniques dominés par les peuhls dans la zone de Mamou, les Sankarankas, Kourankos (groupe Malinké), les Djallonkés et les Kissi dans la zone de Faranah.

Du point de vue activité agricole, le site connaît une relance qui se manifeste par un phénomène de retour à la terre, observé non seulement chez les paysans, mais aussi chez les commerçants dont certains s'investissent dans la création de fermes agropastorales. L'importance numérique du cheptel dans le site (près de 300 000 têtes de bovins) s'explique par le fait que cette activité constitue, non seulement une vocation traditionnelle des éleveurs et agro-éleveurs, mais aussi par la présence de plaines et bas-fonds utilisés comme parcours pour les animaux.

La position frontalière du site favorise des mouvements de plusieurs troupeaux de la Sierra Léone en direction des plaines de Faranah. Ces déplacements sont le plus souvent sources de conflits entre agriculteurs et éleveurs. le site dans son ensemble constitue un important carrefour entre les différents marchés à bétail du Nord (Dogomet dans Dabola, Kaboukariah dans Kouroussa, Kalenko dans Dinguiraye), la région forestière et la Basse Guinée.

C. Mali Project Pilot Sites

This section discusses the characteristics of the three primary sites selected for the project (Sagabari at Kita, Medina Diassa at Yanfolila, and Manankourou at Bougouni), as well as the two secondary sites (Koundia at Bafoulabe and Tousseguela at Kolondieba). Additional statistical details on these sites are provided in Tables 1 and 2.

The proposed project sites are widespread, located in provinces that together cover approximately 1/3 of the country of 420,000 km^2.

The western site, in Kayes/Keita District, was chosen to represent a forest zone managed by a rural community with UNDP support. The community has the intention of constructing a biosphere zone. This site represents a different sort of environment from the other sites. It consists of an area of relatively native forest with a highly diverse fauna and flora especially of wild animals and insects. It is also a zone with what are considered to be pure N'Dama cattle. There is a higher tsetse challenge and trypanosomosis risk at Bakoulabé and Kita. The area is difficult to reach, as access routes are poor. That reduces the potential threat to the habitat of the area. Transhumance routes from the north pass into the Kayes Sud zone.

Régions naturelles et zones agro-écologiques

Le Plateau Mandingue

Repose sur le socle granitique et schisteux du précambrien inférieur et moyen, marbré d'importants seuils doléritiques. La configuration accidentée de la région est due aux importants soulèvements régionaux et

aux mouvements épirogéniques locaux (secondaire, tertiaire).Vers le bas de la région on rencontre le glacis d'épandage constitué de dépôts fluviaux des grands systèmes de drainage du plateau (le Bafing et le Bakoye, principaux affluents du fleuve Sénégal).

Sur les sept zones agroécologiques que compte la région, celle des monts mandingues couvre 3 % de la superficie totale du cercle de Kita. Elle est située à cheval sur les bassins des fleuves Sénégal et Niger.

Le Haut Bani-Niger

Est située en zone birrimienne avec des schistes, micaschistes, gneiss et granites. L'altitude moyenne de la région est de 350 m. Le modelé est celui d'une pénéplaine présentant une série de glacis d'épandage et des plaines alluviales plus où moins larges.

Le Haut Bani Occidental représentant 30 % de la superficie totale de la zone d'étude et le Haut Bagoé 10 %, constituent les zones les mieux arrosées des quatre zones agro-écologiques.

Végétation

La végétation est intimement liée aux types de sols, donc à l'infiltration et à la pluviométrie. La flore de la zone d'étude est assez homogène sur le plan des espèces et des strates. Cependant Toutefois au regard des pressions agricole et pastorale, elle peut varier d'un site à un autre.

Principales formations végétales par zone agro-écologique

Zones agroécologique/sites	Types de sols dominants	Formations végétales	Espèces végétales dominantes	
			Herbacées	Ligneuses
Plateau Mandingue (Sagabari, Koundian)	Terrains rocheux Terrains cuirassés Sols ferrugineux	Savane herbeuse, Forêt dense sèche, Savane herbeuse où arbustive, Savane arbustive	*A.gayanus;D.hagerr.* *P.pedicellatum* *L.togoensis* *A.gayanus* *A.pseudapricus*	*G.copallifera* *P.erinaceus* *C.glutinosum* *D.microcarpum* *G.erubescens*
Haut Bani Occidental (Madina-Diassa, Manankoro)	Terrains cuirassés Sols ferrugineux Sols hydromorphes	-Savane boisée, Forêt claire -Savane verger, Forêt claire Prairie hygrophile et galérie guinéenne	*L.togoensis* *Schizachyrim.sp* *A.pseudapricus* *P.pedicellatum* *A.gayanus;* *P.anabaptistum*	*D.microcarpum* *I.doka* *P.biglobosa* *P.reticulatum* *T.macroptera*
Haut Bagoé (Tousséguela)	Terrains cuirassés avec affleurements rocheux Sols ferrugineux Sols gravillonnaires	-Savanes boisées, Bowés nus, Forêts claires -Savane verger, -Savane verger, Savane boisée	*L.togoensis* *A.sp:D.hagerupii* *A.pseudapricus:* *P.pedicellatum*	*Combretum* *I.doka* *V.paradoxa* *P.biglobosa*

La zone agroécologique des Monts Mandingues reste la plus fournie en espèces fourragères pérennes du genre Andropogon. Ceci dénote l'importance des potentialités fourragères au niveau du site de Sagabari. Cet état de fait pourrait être lié à la faible pression pastorale et à l'inaccessibilité relative du site.

Madina-Diassa dans le Haut Bani Occidental présente un potentiel important en herbacées. Concernant la strate arborée, à l'exclusion des forêts classées et à de la réserve de faune de Nienendougou (Manankoro), elle reste presque identique dans les deux zones.

Potentiel fourrager

La production fourragère des écosystèmes naturels reste beaucoup plus élevée au niveau des sites de Madina-Diassa et de Manankoro ; moyenne à Sagabari et passable à Tousséguela. Les capacités de charge correspondantes ont été évaluées comme suit :

- 4-5 ha/Ubt à Tousséguela
- 2-3 ha/Ubt à Madina-Diassa
- 2-3 ha/Ubt à Manankoro
- 3-4 ha/Ubt à Sagabari

Potentiel fourrager des sites du projet

Potentiels fourragers	Madina-diassa	Sagabari	Manankoro	Tousséguela	Koundian
Biomasse (kg m.s/ha)	900	600	**900**	**400**	**900**
Capacité de charge (ha/Ubt/an)	**2-3**	**3-4**	**2-3**	**4-5**	**2-3**

Potentiel ligneux

Le potentiel ligneux de l'année de référence (1987) dans les sites a été estimé à partir des données du PIRL. Pour ce qui concerne son évolution, les hypothèses d'évaluation sont les suivantes :

- 1,5% comme coefficient d'accroissement annuel du stock ligneux estimé en m^3 (CTFT) ;
- 1,5 m^3/an/habitant correspondant à la consommation en bois énergie en milieu rural ;
- 1,4% correspondant à l'accroissement de la population en milieu rural au Mali (DNSI 2000) ;
- 3,5% comme coefficient de diminution de la productivité du stock ligneux.

C'est sur la base de ces hypothèses que le stock ligneux a été estimé dans les sites respectifs.

Potentiel ligneux/ex-arrondissements

Sites	Potentiel ligneux (en milliers de m^3)	
	1987	**2002**
Sagabari	13.806,240	13.736,64
Yorobougoula	4330,249	4292,77
Manankoro	9407,790	9365,20
Tousséguela	2728,368	2695,58
Koundian	3340,289	3306,88

Le potentiel ligneux ainsi estimé ne prend pas en compte les prélèvements effectués par les urbains à l'intérieur des différents bassins d'approvisionnement en bois énergie et en bois d'œuvre dans les zones.

Cependant malgré l'absence des données chiffrées spécifiques à ce phénomène, ces données indiquent une régression du potentiel ligneux tout autour des sites. A l'avenir, ce phénomène risque de s'amplifier compte tenu du taux d'accroissement plus élevé de la population dans les villes avec pour corollaire une augmentation de la demande en ressources ligneuses pour satisfaire les besoins énergétiques des ménages.

Ressources en eau

La zone du projet est parcourue par les principaux affluents des fleuves Sénégal et Niger.

C'est ainsi que:

- la zone très accidentée du site de Sagabari compte de nombreux cours d'eau de surface au nombre desquels on peut citer le Bakoye, le Bafing, le Mangouba, le Balé et leurs affluents. Ces ressources en eau de surface sont essentiellement temporaires. Les ressources en eau souterraine sont estimées entre 50.000 et 100.000 m^3 par km^2 (PIRT 1986). Dans le site de Sagabari en 1995 les puits à grands diamètre étaient au nombre de 12 et les forages à 34.

- Les zones de la pénéplaine des fleuves Bani, Bagoé et Baoulé, influencent l'environnement immédiat des sites de Madina-Diassa, Manankoro et Tousséguela. Les eaux souterraines du haut Bani-Niger sont localisées dans des fracturations et altérations du substrat. Leur recharge se fait annuellement au rythme de 50.000 à 100.000 m^3 par km^2 à partir des pluies.

Ressources cynégétiques

Naguère considérés parmi les zones les plus giboyeuses du pays, les sites identifiés pour la conservation in situ du bétail ruminant endémique ne recèlent aujourd'hui que quelques espèces sauvages au niveau des écosystèmes naturels classés ou non. Ces écosystèmes, à végétation généralement présentant un état de climax, sont constitués de quelques aires protégées. La dispersion des aires est la suivante :

Répartition des Aires Protégées

Aires Protégées	Superficie (ha)	Sites	Distances/sites Km
Forêt classée de Galé	23.000	Sagabari	30
Forêt classée de Dialakoro	33.200	Madina-diassa	48
Réserve de faune de Niénendougou	40.640		?
Réserve de faune de Niénendougou	40.640	Manankoro	30
Forêt classée de Kobani	3.000	Tousséguela	20
Réserve de Faune de Bafing-Makana	159 000	Koundian	20

La proximité de ces différentes aires par rapport à nos sites dénote une importance relative des ressources cynégétiques. Si la richesse relative de la faune en mammifères sauvages et en insectes de toutes sortes est reconnue au niveau des sites de Sagabari, de Manankoro et de Madina-Diassa, il n'en est pas de même pour Tousséguela où les ressources cynégétiques se limitent essentiellement à la pintade sauvage, au francolin, à quelques antilopes, au cynocéphale et au phacochère dans la forêt classée de Kobani.

Les trois autres sites surtout ceux de Madina-Diassa et de Manankoro riverains de la réserve de faune du Nienendougou, sont réputée pour la présence des grands fauves (Lion, Panthère, Hyène).

On y retrouve également des grands herbivores tels le Cob defassa, l'Hypotrague, diverses antilopes comme le Céphalope, le Guib harnaché et aussi des hippopotames dans le Baoulé (Madina-diassa et Manankoro).

Effectif et caractéristiques du bétail ruminant endémique dans les sites

Les enquêtes réalisées sur ce site prouvent que la robe fauve est de loin la plus dominante (75% des effectifs rencontrés) suivie par le froment (15%) tandis que les robes charbonnée et tachetée sont relativement rares.

La classification du cornage est moins nette avec une dominance du type croissant (55%), suivi par le type en coupe (28%). Les types en lyre et en roue étaient moins fréquents : 15 et 2%, respectivement.

La couleur des muqueuses était majoritairement de 75% claire ; tandis que les muqueuses foncées étaient rencontrées dans seulement 25% des cas.

Les animaux rencontrés portent peu de signes apparents de croisement zébu (bosse, robe pie, taille, etc.). Cet état de fait est confirmé par le flux limité des transhumants vers le site, à cause de l'infestation glossinaire. Le séjour des transhumants est généralement très court.

Les sources vétérinaires estiment la population animale au niveau du site de Sagabari à 3000 bovins et 2000 petits ruminants pour le bétail endémique. Les transhumants, essentiellement les caprins du Sahel, présents sur le site s'élèveraient à 10 000 têtes.

Tous les troupeaux autochtones appartiennent à la race taurine N'Dama. La densité animale dans la zone est considérée comme faible.

Les troupeaux de bovins visités au niveau du site restent de taille modeste (20 à 25 têtes). Les robes brunes avec des muqueuses foncées sont les plus dominantes dans ces troupeaux (60% des animaux rencontrés). Les robes fauve clair ou pie rouge étaient moyennement fréquentes.

Le cornage le plus fréquent est le type en croissant 45% des cas, ou en lyre 35%.

Les moutons Djallonké restent majoritairement blancs avec rarement des taches noires tandis que chez les caprins les robes brunes dominent. Les tailles restent comparables à celles généralement attribuées au Djallonké dans la littérature.

On note une présence massive de troupeaux non autochtones sur les deux sites. Ces troupeaux sont constitués de zébus venant surtout de la région de Ségou. Il a été rencontré à Manankoro beaucoup d'éleveurs transhumants.

A Tousséguela on note très peu de troupeaux bovins constitués d'animaux phénotypiquement proches de la N'Dama. Les robes dominantes sont pie noire avec le cornage en lyre. Presque tous les animaux portent des stigmates de bosse.

Les ovins-caprins restent cependant assez proches du Djallonké sans signe extérieur de croisement. Ceci a été confirmé par l'absence de petits ruminants du Sahel.

A Manankoro, subsistent encore des troupeaux homogènes constitués d'animaux physiquement proches de la N'Dama qui cohabitent avec des troupeaux de zébus implantés. Dans ce site les phénotypes dominants sont des N'Damas à robe fauve claire avec des muqueuses de même couleur et le cornage en croissant. Les caprins rencontrés sur ce site étaient de robes fauve claire tandis que les moutons restent uniformément blancs.

D. Senegal Project Pilot Sites

This section discusses the characteristics of the three primary sites selected for the project (Bandafassi in the Tambacounda region, Wassadou in the Kolda Region, and Tenghori in the Ziguinchor region), as well as the two secondary sites (Medina Yoro Foula in the Kolda region and Diamacouta in the Ziguinchor region). Additional statistical details on these sites are provided in Tables 1 and 2.

(1) Bandafassi

Milieu physique
Le relief est pour l'essentiel celui de l'ensemble de la boucle de la Gambie qui est composée des massifs de Ndébou et de Bandafassi localisés au sud et composés de dolérites paléozoiques ou de métabolites, du

plateau de Lakanta localisé au centre et formé d'un lambeau constitué, en partie, de la cuirasse éocène et de reliefs résiduels entre la Gambie et la Falémé.

Le climat, de type soudano-guinéen, est caractérisé par une saison pluvieuse de 4 mois de juin à septembre, une saison sèche fraîche d'octobre à février et une saison sèche chaude de mars à mai. La température, quant à elle, varie entre 15°C (décembre-janvier) et 40°C (avril-mai). La pluviométrie moyenne au niveau de la station de Kédougou pour la période de 1960 à 1971 était de 1 273 mm. Mais depuis 1973, les précipitations sont de l'ordre de 1 144 mm soit une baisse de 129 mm.

La diversité du substratum géologique fait que la communauté rurale recèle divers types de sols. Les sols minéraux bruts à cuirasse latéritique et gravillons sont localisés sur les matériaux de démantèlement de la cuirasse sur grés et sur schistes. La cuirasse de type ancien est ferrugineuse, massive et constituée par un squelette rouge sombre. La végétation naturelle qui s'y développe est exploitée par le bétail. Des sols peu évolués d'érosion, essentiellement gravillonnaires, parfois à recouvrement sableux, occupent des superficies importantes. On les trouve sur les pentes qui relient les plateaux cuirassés au fonds des dépressions. Ils sont aptes aux cultures de mil, sorgho, arachide et fonio. Les sols argilo-sableux sur collivions et remblais de type ferralitiques et ferrugineux tropicaux sont des sols en bordure des massifs ou des bas de pente associés à des sols squelettiques d'érosion. Les populations qui habitent ces zones y cultivent maïs et arachide. Les sols alluviaux ou hydromorphes qui sont argileux mais aussi riches en limons sont formés sur des dépôts alluviaux récents dans un milieu aquatique (lits mineurs des cours d'eau, fonds des cuvettes). Ils présentent des potentialités agricoles importantes pour le riz et le maraîchage. Enfin, des sols riches en ressources minières de type marno-calcaire et situés au bas des collines présentent une vocation minière (ciment). S'agissant des sols calco-magnésiques localisés au bas des pentes, ils ont une vocation minière (exploitation de marbre). L'or y est aussi exploité artisanalement (orpaillage) le long du fleuve gambie.

Les ressources en eaux souterraines sont la nappe phreatique qui alimente les puits et la nappe maestrichienne qui alimente les forages. Les eaux de surface sont representees par le reseau hydrographique du fleuve gambie et d'un reseau dense et diversifie de cours d'eau. Le fleuve gambie draine le nord-est de la communaute rurale et constitue la limite avec le parc national du niokolo-koba. La communaute rurale compte aussi d'importantes mares et des marigots. La duree en eau des mares est parfois breve et certaines mares s'assechent des le mois de fevrier.

La végétation est constituée de savanes soudaniennes riches et variées où les formations végétales se présentent en savane boisée, voire en forêt dense ou fermée dans les bas fonds et les versants à pente faible mais aussi en forêt galerie le long des cours d'eau, des affluents et marigots. De nombreuses espèces ligneuses de l'étage supérieur et de sous-bois sont rencontrées en plus de celles des berges inondées. La végétation herbacée est essentiellement composée de graminées annuelles, essentiellement des andropogonées.

Caractéristiques socio-économiques

La population de la communauté rurale avoisine 16 401 habitants, avec un taux d'accroissement moyen de 1,46 %. La densité de la population est évaluée à 3 habitants/km². La population comprend, par ordre d'importance, les peulhs d'origine diverse qui vivent dans le *bandé*, les *bédick* ou *bandale* qu'on rencontre aussi dans le *bandé* et les *diakhanké* qui occupent la partie Est de la communauté rurale. La

migration rurale-rurale concerne les jeunes hommes «*navétanes*» ou saisonniers qui se déplacent pendant l'hivernage en direction des zones agricoles. Pour ce qui est de la migration rurale-urbaine, elle concerne les jeunes qui vont dans les centres urbains à la recherche d'emploi. La migration internationale, principalement vers la France, a été aussi fréquente surtout chez l'ethnie *diakhanké*.

Les femmes sont organisées en groupements de promotion féminine au nombre de 37 avec 20 à 100 membres par groupement. Cette forme d'organisation permet d'accéder à des financements qui leur permettent de développer le maraîchage, le petit commerce, l'agriculture, l'artisanat, la teinture, l'embouche. Pour l'essentiel, ces activités sont financées par une caisse d'épargne et de crédit, les projets de promotion économique des groupements économiques, la Fédération Nationale des Groupements de Promotion Féminine et les structures du Crédit Mutuel. Des caisses locales aussi sont alimentées par les recettes tirées des moulins à mil. En outre, les femmes sont impliquées dans la gestion des troupeaux d'espèces à cycle court (moutons et chèvres). Cette catégorie du cheptel appartient en général aux femmes. Cependant, même si elles sont propriétaires, la décision de vendre est laissée à l'appréciation du responsable du troupeau qui est, en général, le mari.

L'agriculture constitue la première activité économique pratiquée par une frange importante de la population. Cependant le potentiel agricole de la zone est très faible à cause de la pluviométrie variable et de la pauvreté des sols. Au niveau du Service de l'agriculture, des dispositifs permettant aux producteurs de disposer de semences de qualité n'existent pas et surtout pour les cultures vivrières qui, eEn plus, ne bénéficient pas d'un encadrement technique adéquat. Les cultures vivrières pratiquées n'utilisent pas souvent d'engrais. Les cultures de rente encadrées par les sociétés de développement répondent souvent à l'application d'un paquet technologique.

La politique de securisation alimentaire qui s'appuie notamment sur la relance de la production en ameliorant la productivite se fixe comme objectifs, la maitrise de l'eau, l'intensification et la diversification, l'amelioration du stockage et de la transformation des produits recoltes. Cependant, les resultats techniques obtenus dans ces domaines n'ont pas encore atteint le niveau escompte. Les conditions defavorables rencontrees qui affectent la region, provoquent un retrecissement de l'espace agricole exploitable et une grande variabilite des productions. Du fait des annees de secheresse et de la degradation des terres, l'augmentation des superficies a eu tres peu d'impact sur la production a cause de la baisse des rendements.

Les niveaux de production en cultures vivrières et de rente à kédougou font apparaître une diminution des cultures de rente. Les superficies cultivées en arachide sont passées de 9 189 hectares en 1985/86 à 2 415 hectares en 1996/97. Les superficies emblavées en cultures vivrières connaissent des hausses comme le sorgho dont les superficies cultivées, qui étaient de 9 676 hectares en 1985/86, ont été évaluées à 44 578 hectares en 1995/96.

L'elevage est la seconde activite, mais reste lui aussi tributaire des conditions climatiques. L'alimentation du cheptel est principalement basee sur les paturages naturels soumis aux aleas climatiques, aux feux de brousse et la pression des cultures entraine des mutations sur les pratiques pastorales. Les residus de recolte commencent seulement maintenant a etre faiblement exploites pour l'elevage (tiges de mil, de sorgho, paille de riz, fanes d'arachide et de niebe) et des sous-produits agro-industriels (graine de coton, tourteaux et son). L'elevage est de type essentiellement sedentaire avec des mouvements du betail souvent limites. Pendant l'hivernage, les troupeaux sont eloignes des champs de culture. Les sources d'eau d'abreuvement sont la gambie et ses affluents, les mares et marigots. En saison seche,

l'alimentation du betail est aussi constituee de tiges de mil et de sorgho en plus de la vegetation ligneuse. La biomasse exploitable va de 4 000 a 5 000 kg de ms/ha pour la communaute rurale soit une production moyenne de 4 500 kg de ms/ha en biomasse herbacee et ligneuse dont 2500 kg de ms/ha pour la strate herbacee, soit une capacite de charge de 2 ha/ubt pour les 9 mois de la saison seche.

Sur le plan qualitatif, le fourrage y est cependant plus grossier à cause de la forte présence d'andropogonées qui se lignifient très vite perdant ainsi progressivement leur valeur nutritive. De plus, la zone est également très exposée aux feux de brousse comme l'attestent les statistiques relevées ces dernières années.

Infrastructures. Les infrastructures hydrauliques sont composées de 9 forages, 27 puits, 4 bassins de rétention. D'autres infrastructures sociales (santé, poste et télécommunications) sont présentes en plus de 14 centres d'alphabétisation, 4 marches hebdomadaires, 9 forages et 27 puits. Seuls 21 % de la population a accès à un poste de santé et près de 50 % à l'eau.

Faune. La faune de la communaute rurale de bandafassi qui est riveraine du parc national du niokolo-koba est riche et varié (francolins, cailles, tourterelles, pigeons, lièvres, phacochères, lions, servals, chats sauvages, civettes, fenettes, singes, loutres, mangoustes, lycaons, buffles, antilopes-cheval, cobs de buffon, oies, perroquets, perruches à longue queue, outardes, poules du pharaon, pythons et varans).

(2) Wassadou

Caractéristiques physiques

La communauté rurale de Wassadou est divisée en deux zones selon la texture des sols, l'hydrographie et la végétation. La vallée du Poussang est arrosée et couvre une superficie de 658 ha passant par Kaone, Saré Kaba et Medina Poussang. Le reste de la communauté rurale s'étend de Pina à Thieur Bessey Samba en passant par Boya, Saré Wogna et Diancancounda pour couvrir 167 km² et elle comprend 10 villages.

Le climat est de type soudano-guinéen, chaud et humide. Il est caractérisé par un régime de pluies relativement abondantes avec des isohyètes 900 à 1200 mm, avec une saison pluvieuse de 4 mois de juin à septembre, une saison sèche de mai à octobre et une saison pluvieuse de novembre à avril. Les mois d'août et de septembre reçoivent les quantités de pluies les plus importantes. La pluviométrie se caractérise par une grande variabilité annuelle voire mensuelle. De 1960 à 1971, les précipitations enregistrées annuellement à Vélingara ont été de 1 013 mm contre 817 mm pour la période de 1972 à 1998. Sur le plan diachronique, il apparaît une baisse de la pluviométrie de près de 200 mm. A Pakour, la moyenne pluviométrique enregistrée pour la période 1989-1996 a été évaluée à 854 mm. Le régime thermique est caractérisé par une première période de juillet à février avec les températures les plus basses aux mois de décembre et janvier. La deuxième période couvre les mois de mars et juin et se caractérise par les températures les plus élevées.

Trois types de sols sont essentiellement observés dans la communauté rurale avec des sols sableux localement appelés ndiarndé, des sols argileux ou ndata et des sols latéritiques. La zone est arrosée par la vallée du Poussang qui prend sa source dans l'arrondissement de Dabo, traverse les villages de Kaone, Saré Kaba, Médina Poussang et se termine en Guinée-Bissau. D'importantes mares temporaires sont

localisées dans les dépressions. Les eaux souterraines se situent environ à une profondeur de 20 mètres. La nature du sol (zone du socle) et l'abaissement de la nappe ne favorisent pas souvent l'accès a l'eau.

La végétation rencontrée est caractéristique du domaine soudano-guinéen avec des Anacardiceae Apocynaceae, Caesalpiniaceae, Combretaceae, Meliaceae, Mimosaceae, Poaceae, Ramnaceae, Rubiaceae. La strate herbacée est dominée par *Diheteropogon amplectens*, *Eleusine indica*, *Andropogon pseudapricus* et *Andropogon gayanus*

Caractéristiques socio-économiques

La population totale de la communauté rurale est évaluée à 12 758 habitants pour une densité de 14 habitants/km² avec un total 61 villages. Elle est en 6 564 hommes et 6 194 femmes. La zone Nord qui fait frontière avec l'arrondissement de Kounkané a une population à dominance peulh (82 %), suivie des mandingues (10 %) et d'autres éthnies (8 %). La zone Sud faisant frontière avec la Guinée-Bissau compte une population estimée à 8 155 habitants et elle est composée de peulhs, mandingues et sarakolés. Il est constaté dans cette partie de la communauté rurale une migration intense vers la Guinée.

La dynamique organisationnelle de la communauté rurale montre l'existence de structures de développement à la base assez nombreuses et constituées de groupements féminins. Les activités développées à travers ces groupements féminins sont le petit commerce, la fabrication de savon, les prestations de service dans les exploitations privées. Les femmes sont aussi fortement impliquées dans le petit élevage (gestion des troupeaux constitués de petits ruminants, commercialisation du lait).

L'agriculture. La communauté rurale couvre 377 km² dont 20 800 hectares sont cultivables avec des sols argilo-sableux, des bas-fonds et des vallées. Dans la zone Nord, les principales cultures sont l'arachide, le coton, le mil et le maïs et on y rencontre le manioc et le fonio. Dans la partie Sud de la communauté rurale, les sols de type hydromorphe sont aptes à la culture pluviale et à l'arboriculture fruitière mais le matériel agricole est insuffisant et vétuste. Le revenu assez faible des producteurs et l'absence de crédits ne favorisent pas son renouvellement. L'accès aux intrants (semences et engrais) se pose avec acuité. Cependant, la SODEFITEX fournit aux coton-culteurs des produits phytosanitaires (herbicides), de l'engrais et du matériel (pompes pour herbicide). La productivité et les productions agricoles restent cependant faibles. La production vivrière concerne, par ordre d'importance, l'arachide et le coton qui sont les principales cultures de rente encadrées et/ou commercialisées par la SODEFITEX et la SONACOS. On peut constater que, pour ces deux cultures, l'augmentation des surfaces cultivées ne correspond pas forcément à une augmentation de la production.

Les ressources forestières. L'exploitation des produits forestiers représente une activité économique importante de la communauté rurale. Les activités forestières portent sur l'exploitation des produits de cueillette, du charbon de bois, du bois d'œuvre et de service et elles constituent une source de revenus importante dans la zone.

L'élevage. Les modes traditionnels d'exploitation des ressources pastorales sont de type extensif et dominés par les peuhls qui constituent l'ethnie majoritaire. Les modes d'exploitation des parcours naturels sont ceux des mandingues et des sarakolés qui sont surtout sédentaires et ceux des peuhls qui pratiquent une petite transhumance. Les éleveurs pratiquent un système extensif marqué par une faible amplitude de déplacement des troupeaux. Pour les pasteurs, ce système s'adapte parfaitement aux conditions souvent difficiles de la zone. Le bétail représente une richesse qui garantit une marque de

considération sociale. La zone disposait de vastes pâturages, de nombreuses mares, de cours d'eau pour l'abreuvement du bétail. Leur réduction constitue une des grandes préoccupations des populations.

L'alimentation du bétail est, pour l'essentiel, fournie par les pâturages naturels qui occupent une bonne partie de la communauté rurale. Les pâturages de la zone sont de type aérien et herbacé. En hivernage, le tapis herbacé est la principale alimentation du cheptel. Par contre, pendant la saison sèche, les pâturages aériens sont exploités pour combler le déficit fourrager lié à la qualité des fourrages qui sont riches en lignine. La végétation herbacée est essentiellement composée de graminées avec *Andropogon pseudapricus, Dihetropogon hagurupii, Cenchrus sp, Aristida sp, Panicum turgidum, Dactyloctenium aegyptiaca* et *Brachiaria sp.* En 2002, il a été estimée une production de l'ordre de 4 000 kg de MS/ha en biomasse herbacée et ligneuse. La biomasse herbacée est estimée, en moyenne, à 2 000 kg de MS/ha soit une capacité de charge de 2,5 ha/UBT.

Infrastructures. Les infrastructures hydrauliques sont constituees par 1 forage, 58 puits, 1 marche hebdomadaire et 22 centres d'alphabetisation, entre autres. Les problemes de route et de sante se posent avec acuite car seuls 24 % et 34 % ont, respectivement, acces a une route et a un poste de sante.

Faune. La communauté rurale est peuplée d'une faune abondante et variée (phacochères, biches, singes, hyènes, lapins). Cette faune est menacée de disparition du fait du braconnage et des effets néfastes des feux de brousse.

(3) Tenghori

a) Caractéristiques physiques

Le climat dans la communauté rurale de Tenghori est de type soudano-guinéen, chaud et sec, marqué par la saison des pluies ou hivernage qui dure de juin à octobre. Les vents dominants sont ceux de la mousson de secteur Est-Ouest et qui apportent des pluies abondantes. La saison sèche va de novembre à mai avec des vents dominants qui soufflent du nord au sud (Alizé et Harmattan). Avant la sécheresse des années 1970, la moyenne annuelle des précipitations oscillait entre 1 400 et 1 600 mm de pluie. Mais depuis, les précipitations sont devenues déficitaires par rapport à la normale même si on note une remontée progressive de la situation depuis 1987. De 1984 à 1989, les maxima sont de 1 330 mm et 76 jours de pluies et les minima sont 896 mm et 59 jours de pluies.

Trois types de sols sont bien identifiés. Les sols sablo-argileux, de texture légère et de faible capacité de rétention d'eau, sont favorables aux cultures d'arachide, de mil, et de maïs, etc. Les sols argileux sont situés dans les bas-fonds riches et consacrés à la riziculture. Les sols latéritiques occupent le centre, dans les zones de Koutenghor et de petit Koulaye, et constituent les «carrières».

La communauté rurale ne possède pas de cours d'eau temporaires. Mais il existe des marigots qui ne tarissaient pas et qui servaient de points d'abreuvement pendant les années de bonne pluviométrie. Avec la sécheresse, ces marigots n'affleurent plus que durant la saison des pluies, de juin à octobre. La nappe phréatique est peu profonde dans certains secteurs où elle est affleurante à partir de 5-15 m.

La CR recèle d'importantes potentialités forestières avec, dans chaque village, une forêt jalousement gardée par les villageois car servant de lieu de culte. La végétation est riche et très variée du fait de l'importance des précipitations. Elle est composée, en plus du tapis herbacé, de grandes espèces comme le

fromager, le caïcédrat, le baobab, le *linké*, le *santan*, etc. ainsi que d'espèces intermédiaires comme le rônier, le palmier, le néré qui jouent un rôle économique important pour les populations. Les arbustes sont constitués de *nguer*, de lianes, etc. Le domaine protégé est composé des forêts classées de Boutolatte, de Nialor et de Tendiéme. Les forêts de Boutolatte et Nialor, composées essentiellement de *Gmelina* et de teck sont gérées par la CAFAL, société d'exploitation des allumettes qui en assure l'entretien et l'exploitation.

Caractéristiques socio-économiques

La communauté rurale de Tenghori comprend 13 410 habitants répartis dans 34 villages avec un taux d'accroissement annuel de 2,04 % pour la décennie 1980-1990. La densité est de 44 habitants au km². La frange active de la population est de 43,95 % dont 23,71 % de femmes et 48,73 % de jeunes. Les vieillards représentant 7,3 % de la population. On y rencontre les diolas (98 %), les mandingues (1 %) et d'autres ethnies qui ne représentent que 1 % de la population.

L'agriculture . L'agriculture est extensive malgré l'introduction de la traction bovine. L'agriculture constitue l'activité principale des populations. Cependant, on note une évolution des autres activités comme l'artisanat, la menuiserie, la maçonnerie etc. Les cultures de l'arachide et du riz dominent toutes les autres spéculations. Du fait de la remontée de la langue salée, les superficies emblavées en riz connaissent une régression dans les zones de Diourou, Tendimane et Boutolatte. L'attaque des cultures par les parasites occasionne également une baisse des rendements. La disponibilité en terres cultivables est très importante car les sols sont fertiles et adaptés à toutes les spéculations qui s'y pratiquent. Les superficies cultivées représentent au total 3 480 ha et restent faibles par rapport au potentiel existant.

Le matériel est similaire à celui des autres communautés rurales avec des charrues, des semoirs et houes sine. On note 166 paires de bœufs, 134 charrettes à bœufs et 252 butteurs-billonneurs. La traction est pratiquée pour les cultures de plateau mais elle n'est pas utilisée dans la riziculture. Il n'y a pas de secco pour les semences sélectionnées. Quand les semences d'arachide étaient distribuées à crédit, la distribution se faisait à partir de la commune de Bignona. Quant aux autres semences (riz, maïs), la distribution se faisait par les sociétés d'intervention (PIDAC) et les populations déplorent le manque de semences sélectionnées. L'engrais organique reste le plus utilisé dans la zone et se fait par parcage et transport du fumier dans les champs et les rizières. L'engrais chimique, du fait de sa cherté, est peu utilisé depuis la suppression du Programme agricole.

Le parasitisme des cultures a pris de l'ampleur durant les dernières campagnes agricoles, surtout sur les cultures vivrières. Les parasites les plus fréquents sont les cantharides, les criquets pélerins, les sauteriaux, les chenilles et les termites. Cependant, grâce au dispositif de lutte mis en place, les dégâts enregistrés ne sont pas très importants.

L'élevage. Le système d'élevage pratiqué est un élevage traditionnel de type extensif. Son exploitation n'est pas encore entrée dans un circuit organisé. Les animaux sont des biens familiaux et de prestige social dans la mesure où ils constituent une épargne confiée et gérée par un berger peulh qui est rémunéré avec le lait tiré du bétail. Les propriétaires de bétail ne s'en servent que pour des besoins familiaux (funérailles, mariage, circoncision) où en de rares occasions pour acheter des vivres en cas de mauvaises récoltes. Les asins et équins employés pour la traction et les labours légers, commencent à faire leur entrée dans la communauté rurale. Pendant l'hivernage, presque tous les troupeaux sont localisés dans la forêt classée des Kalounayes. La prophylaxie du bétail est assurée annuellement par le Service de l'élevage contre la peste bovine, la péripneumonie et la pasteurellose. La localité possède un important

parcours du bétail constitué par les jachères et la forêt classée de Kalounayes. Cependant, l'alimentation devient critique à partir de mars, avril et mai lorsque le tapis herbacé est menacé par les feux de brousse. Les pâturages sont colonisés par une espèce odorante *Hyphtis suaveolens* non appétée par le bétail. La biomasse moyenne enregistrée dans la zone est de 2 600 kg de MS/ha soit une capacité de charge de 1,9 ha/UBT.

Durant les années de bonne pluviométrie, le problème d'abreuvement ne se posait pas à cause de la présence de plusieurs marigots qui ne tarissaient pas. Actuellement, avec le déficit pluviométrique, ces points d'eau n'existent plus et les quelques marigots temporaires disparaissent dès la fin de la saison des pluies ce qui fait que les animaux rencontrent d'énormes difficultés d'abreuvement en saison sèche. Le système d'élevage pratiqué n'a pas suscité une organisation des éleveurs du fait que les propriétaires des animaux ne s'occupent pas du gardiennage et que les troupeaux sont dans la plupart du temps un bien familial.

La faune. On rencontre des hyènes, biches, chacals, singes, porc-épics, serpents et divers oiseaux.

(4) Médina Yoro Foula

Caractéristiques physiques

La configuration géomorphologique de la communauté rurale de Médina Yoro Foula offre un relief relativement plat avec une grande vallée alluviale au centre qui constitue le prolongement de l'embranchement de Sofagnama, affluent du fleuve Gambie. Trois unités géomorphologiques sont représentées par un plateau cuirassé, des vallées et des plaines.

Le climat est de type soudano-guinéen, chaud et sec, marqué par deux saisons bien distinctes qui sont la saison sèche qui s'étale d'octobre à juin avec des vents dominants qui soufflent du Nord au Sud (Alizé et Harmattan) et, ensuite, la saison des pluies ou hivernage qui s'étale de juin à octobre. Les vents dominants sont ceux de la mousson apportant des pluies abondantes. Le passage des différentes masses d'air, d'origine, de caractéristiques et de directions différentes, causent des écarts importants au niveau des températures avec une moyenne de 40°C pendant les mois les plus chauds (mars à juin) et 20°C en moyenne de novembre à janvier. Par sa position géographique, la communauté rurale de Médina Yoro Foula se situe dans la zone comprise entre les isohyètes 800 et 900 mm. La moyenne décennale de 1981/1991 y a été de 839,5 mm pour 51 jours de pluies, avec cependant une grande fluctuation inter-annuelle de la pluviométrie entre un maximum de 1 038 mm et un minimum de 588 mm. Les périodes les plus pluvieuses de la saison se situent aux mois de juillet et août tandis que les périodes les moins pluvieuses concernent les mois de juin et d'octobre.

Les sols peuvent être regroupés en quatre types. Les sols *dior* silico-argileux à prédominance sableuse ont une perméabilité qui les destinent à la culture de l'arachide et ils représentent 35 % de la communauté rurale. Les sols *deck*, riches en argile et en calcium et favorables à la culture du riz, du maïs et de la patate, représentent 17 % de la communauté rurale. Ils sont dans les bas-fonds et sont inondés par le Sofagnama en saison des pluies. Les sols *deck-dior* sont constitués de sols argileux sableux et occupent 47 % de la communauté rurale et se prêtent parfaitement à la culture de l'arachide, des céréales et même à l'arboriculture. Les sols latéritiques occupent 1 % du territoire sur sa partie Est et sont destinés à la culture de l'arachide. L'inexistence de terres incultes offre des potentialités agricoles avec un disponible de 52 550 ha de terres cultivables dont seulement 10 % ont été mises en valeur en 1992 et 17 % en 1998.

La végétation est de type soudanien sous forme de forêt et de savane arborée. Le peuplement végétal est riche et diversifié. La forêt classée du Guimara couvre 13 250 ha et occupe une partie du Sud-Ouest de la communauté rurale où la végétation est plus dense. Elle recèle, par endroits, une végétation dense de grands arbres couverts de lianes et regorge d'immenses potentialités pour le développement du secteur forestier.

L'hydrographie est conditionnée par la pluviométrie qui connaît une très grande variabilité inter-annuelle. Elle est parfois déficitaire ou entrecoupée de poches de sécheresse. Lorsque les pluies sont abondantes, l'inondation des bas-fonds par les eaux de ruissellement favorise la formation de marigots qui se déversent dans la vallée de Sofagnama offrant ainsi des possibilités de riziculture pendant les bonnes années pluviométriques. Des mares et marigots, plus ou moins importants et au nombre de six, restent reliés à la vallée par des points d'eau temporaires qui sont les seules sources d'abreuvement du bétail (Kibassa, Saré Mamadou Ly, Médina Yoro Foulah, Mélia Mbouka, Médina Ngounass, Sinthiou Hella). Une nappe phréatique variant de 12 à 40 m de profondeur a permis le creusement de 191 puits ordinaires dont une cinquantaine n'est plus fonctionnelle et quatre puits pastoraux. L'exploitation des nappes les plus profondes permet de disposer d'un forage à Médina Yoro Foula dont les capacités et les ressources disponibles ne permettent cependant pas de satisfaire les besoins des populations et du cheptel.

Caractéristiques socio-économiques

La population est estimée à 11 281 habitants dont 5 787 de sexe mâle et 5497 de sexe femelle avec un taux de croissance de 2,55 % et une densité de 17 habitants/km². Cette population se répartit en population active (58,46 %), population jeune (38,40 %) et personnes du troisième age (3,14 %). La population est répartie dans 74 villages regroupés au nord et au centre de la CR, laissant le Sud - Ouest presque vide et occupé par la forêt du Guimara. La population est composée essentiellement de peulhs (48 %) qui sont les autochtones et de wolofs (45 %), en plus des minorités ethniques (Kagnadji, Mandingues, Bassari, Sérère, etc.) qui représentent 7 % des effectifs.

Le secteur primaire occupe 95 % des actifs du fait de l'importance des ressources naturelles de la zone. L'agriculture, l'élevage et la production forestière regroupent l'essentiel des activités socio-économiques. Les autres activités sont l'artisanat, le commerce et les services. L'exploitation forestière occupe pratiquement autant de ménages que l'élevage et l'agriculture contrairement à Bandafassi et Wassadou. Les femmes s'organisent en groupements féminins et s'adonnent au commerce, à l'élevage des petits ruminants, aux activités agricoles surtout pluviales.

L'agriculture. Les superficies cultivées occupent plus de 645 000 ha et concernent l'ensemble des terres de plateau et de bas fonds. Les variétés cultivées sont, pour les cultures vivrières, le mil, le maïs, le sorgho et pour les cultures de rente, l'arachide, le riz et le coton. Les cultures maraîchères concernent toutes les variétés légumières locales ou importées. Les superficies cultivées sont faibles par rapport aux disponibilités du fait du manque d'organisations des producteurs. En 1990, la moyenne par actif était de 1,97 ha. La culture de l'arachide domine toutes les autres spéculations et occupe 27,8 % de l'ensemble

des superficies cultivées. Cette prédominance s'explique par l'adaptation de l'arachide à la zone et les revenus qu'elle génère pour la satisfaction des besoins monétaires et l'achat des semences.

Le développement de la culture du coton dans la communauté rurale a été ralenti par le refus des wolofs de s'adonner à cette culture. Le système de production est, à peu prés, le même au niveau de toutes les ethnies, mais varie selon le type de culture. Ainsi, le labour est principalement réservé aux maïs, alors que pour le mil, l'arachide et le coton, les populations préfèrent le semis direct. Les terres de plateau sont bien adaptées aux cultures sèches, alors que le riz est cultivé dans les bas-fonds et principalement par les femmes.

Les sols sont fertiles et adaptés à toutes les spéculations. Ils constituent une richesse inestimable pour les populations. Les superficies cultivées sont estimées à moins de 10 %. Cependant, des menaces d'épuisement planent avec notamment les défrichements sauvages, non contrôlés autour des villages progressant vers la forêt et les zones protégées, l'érosion hydrique, les feux de brousse répétés, l'absence de fumure organique et minérale, l'inexistence ou la faiblesse de la jachère. Les producteurs exploitent toujours les mêmes superficies en pratiquant un système de rotation des cultures qui accélère l'épuisement de terres. On note généralement, un sous équipement et une vétusté du matériel agricole qui est composé de charrues UDF, semoirs «super-éco», houes occidentales, batis *arara*, charrettes à bœufs ou à cheval, etc. Bien que les populations ne disposent pas de beaucoup de moyens, le matériel agricole est bien utilisé dans la communauté rurale par l'ensemble des producteurs et ceux qui n'en disposent pas font recours à la location. L'approvisionnement en matériel s'effectue sur les marchés gambiens ou grâce à des prêts auprès de la CNCAS ou de la SODEFITEX.

La traction animale est bien répandue dans la zone. Bœufs, chevaux et ânes de trait servent au labour, au semis, à l'entretien, au transport des récoltes et des populations et aux besoins domestiques. Le bétail Ndama trypanotolérant est le principal animal de trait utilisé du fait de sa trypanotolérance alors que les chevaux et les ânes achetés dans le Bassin arachidier souffrent de la trypanosomiase et par conséquent ont une moindre longévité et capacité de reproduction, d'où leur petit nombre dans la zone.

Mises à part les réserves personnelles, les semences sont octroyées par les mêmes circuits que ceux du matériel agricole. Des semences sélectionnées sont disponibles seulement pour le coton et le maïs et elles étaient gratuites jusque récemment. Depuis, elles sont vendues comme les autres intrants par la SODEFITEX et la SENCHIM. La fertilisation des terres est une pratique très commune sous forme de fumure organique et d'engrais chimiques. La fumure organique concerne les champs de case (maïs, mil, sorgho, niebé, manioc, etc.) grâce au parcage d'animaux ou par la production de compost dans les fosses fumières vulgarisées par le SODEFITEX. Cependant, le mode d'élevage extensif ne favorise pas le développement de cette méthode. Les engrais chimiques, quant à eux, sont faiblement utilisés à cause de leurs coûts élevés et des difficultés d'acquisition, depuis la suppression du Programme agricole. Seuls les paysans encadrés par la SODEFITEX et la SENCHIM l'utilisent pour le coton et le maïs sélectionné. La CNCAS intervient timidement dans les crédits de campagne pour l'acquisition d'engrais.

L'élevage. Le type extensif domine et l'alimentation de même que l'abreuvement ne posent pas de problèmes pendant la saison des pluies grâce au couvert végétal herbacé et ligneux bien appété par le

bétail. La strate herbacée, riche en hivernage, est constituée de graminées annuelles et de légumineuses bien appétées par le bétail. Cependant, des contraintes hypothèquent les capacités naturelles d'alimentation et d'abreuvement du cheptel à partir du mois de janvier. En effet, les feux de brousse détruisent une bonne partie du couvert végétal. Le cheptel gambien qui vient paître dès la fin de l'hivernage contribue aussi à un surpâturage surtout dans les villages wolofs. Le ruissellement des eaux de pluies vers la vallée de Sofagnama et une intense évaporation des eaux stagnantes dans les bas-fonds créent des problèmes d'abreuvement, d'où l'utilisation de puits villageois ayant des profondeurs de 12 à 35 m.

La production moyenne des pâturages est évaluée à 3 500 kg de MS/ha de biomasse herbacée et ligneuse. La biomasse herbacée est estimée à 1800 kg de MS/ha soit une capacité de charge de 3 ha/UBT. Les cultures fourragères ne sont pas pratiquées et seuls les animaux de trait bénéficient, en saison sèche, des réserves de fanes d'arachide stockées pour pallier le déficit vivrier et éviter la divagation. L'insuffisance des points d'abreuvement, surtout les puits pastoraux et forages, et le tarissement des mares et marigots dès les dernières pluies, entraînent un mouvement du cheptel vers le territoire gambien.

Infrastructures. Les infrastructures hydrauliques sont très peu nombreuses et se résument à 52 puits aménagés et un forage. La communauté rurale compte 229 puits traditionnels dont seuls 155 sont fonctionnels du fait d'un tarissement causé par le déficit pluviométrique combiné à la surexploitation. En effet, les populations et le cheptel se partagent les mêmes puits car les puits pastoraux ne sont qu'au nombre de 4.

Faune. La faune se compose essentiellement de phacochères, écureuils, rats, singes, chats sauvages, pintades, perdrix, lièvres, hyènes, boa, pigeons, etc. Le lion, la girafe, l'antilope et la panthère y sont devenus des espèces disparues ou en voie de disparition.

(5) Diamakouta

Caractéristiques physiques

La communauté rurale de Diamacouta se caractérise par un relief assez homogène de plateau. Les sols sont de type *dior* et *dior-deck*, aptes aux cultures de l'arachide et du mil. La saison des pluies dure 4 à 5 mois (de juin à octobre) et la saison sèche s'échelonne sur 7 mois (novembre à mai). La température est élevée surtout de mars à juin, et peut atteindre parfois 40° C. La pluviométrie est bonne puisque la communauté rurale est localisée entre les isohyètes 1 000 et 1 200 mm. Mais, comme partout ailleurs dans la zone soudano-guinéenne, la pluviométrie connaît une très grande variabilité spatio-temporelle avec, entre 1981 et 1990, des maxima de 1 250 mm et 70 jours de pluie et des minima de 667 mm et 54 jours de pluie. Les seules sources d'eau sont les eaux souterraines captables à partir des puits avec une nappe entre 15 et 30 mètres.

Le domaine protégé de la communauté rurale couvre 40 000 ha. La végétation est composée d'une strate arborée régulière faiblement diversifiée en espèces avec des arbres d'une hauteur moyenne de 15 m. Les principales espèces sont *Pterocarpus erinaccus, Khaya senegalensis, Afzelier africana*. Le sous-bois est composé de légumineuses diverses, de *Combretum micranthum* (Kinkèliba), et de *Combretum glutinosum* (Diambakatang). Quant à la strate herbacée, elle est dominée par des graminées parmi lesquelles, *Oxythenanthera abyssinica* (Bambou) qui n'existe que dans la partie Est.

Caractéristiques socio-économiques

La population est de 21 879 habitants répartis dans 97 villages avec une composition ethnique diversifiée avec 85 % de peuhls, 10 % de mandingues, 4 % de wolofs et 1 % de sérères. Cette population s'adonne principalement à l'agriculture et à l'élevage. Les femmes s'adonnent aux travaux champêtres et aux activités de cueillette. Elles font aussi l'élevage des petits ruminants.

L'agriculture. La communauté rurale dispose de 55 100 ha de terres cultivables dont les 16 000 ha sont cultivées soit 1,14 ha/actif. Ce rapport est faible par rapport aux superficies cultivables. L'agriculture reste toutefois très traditionnelle. Les sols, de type *dior-deck*, sont peu fertiles, mais aptes aux cultures céréalières (mil, sorgho, riz et maïs) qui sont la base alimentaire de l'ethnie peulh prédominante. L'équipement en matériel agricole est très faible et même inexistant. La traction est pratiquement inexistante. Les semences ne sont pas fournies dans la zone. La fumure organique reste la méthode la plus utilisée et se fait par parcage des animaux, dans les parcelles de case, et même dans les champs de plateaux, pour le mil, le maïs et le sorgho. L'engrais chimique est faiblement utilisé. Les rendements sont variables entre 500 et 1 300 kg. Les superficies de riziculture ont augmenté de 9 000 ha en 1960 à 18 240 ha en 1991.

L'élevage. Les populations sont, en majorité des peulhs, et le sous-secteur de l'élevage occupe une place prépondérante. L'alimentation du bétail est essentiellement fournie par les pâturages naturels. La strate herbacée est surtout composée de graminées annuelles très grossières. Les valeurs alimentaires de ce type de pâturages diminuent en saison sèche et sont souvent la proie des feux de brousse. La production de ces pâturages est évaluée à 2400 kg MS/ha soit une capacité de charge de 1,5 ha/UBT.

Les infrastructures. Les puits ordinaires sont au nombre de 88 auxquels s'ajoutent 4 forages implantés à Tankon, Sacita, Boudouck, Diamacouta. Pour mettre en valeur ces infrastructures, une adduction d'eau a été faite au niveau des forages de Sacita et Tankon. Des difficultés sont rencontrées par les populations pour l'accès aux infrastructures de base. Le taux d'accès à l'école de 68 % est peu satisfaisant.

La faune. Les ressources cynégétiques de la CR se composent de lièvres, phacochères, singes verts, genettes communes. Quant aux oiseaux, les plus représentatifs sont les francolins, les mange-mil et les pintades.

SECTION 2 – COUNTRY INFORMATION

Table 3: **Highlighted Country Data**

	Mali	**Senegal**	**Guinea**	**Gambia**
Coordinates	17° 00 N, 4° 00 W	14° 00 N, 14° 00 W	11° 00 N, 10° 00 W	13° 28 N, 16° 34 W
Human population*	11,008,518 (July 2001 est.)	10,284,929	7,613,870 (July 2001 est.)	1,411,205 (July 2001 est.)
Population growth rate	2.97% (2001 est.)	2.93% (2001 est.)	1.96% (2001 est.)	3.14% (2001 est.)
Area	*Total:* 1.24 million sq km *Land:* 1.22 million sq km *Water:* 20,000 sq km	*Total:* 196,190 sq km *Land:* 192,000 sq km *Water:* 4,190 sq km	*Total:* 245,857 sq km *Land:* 245,857 sq km *Water:* 0 sq km	*Total:* 11,300 sq km *Land:* 10,000 sq km *Water:* 1,300 sq km
Livestock pop.: **Cattle** **Sheep** **Goats**	 6,930,000 6,500,000 8,880,000		 2,202,259 612,294 728,681	 323,000 129,000 228,000
Land use:	Arable land: 2% Permanent pastures: 25% Forests and woodland: 6% Other: 67% (1993 est.)	Arable land: 12% Permanent crops: 0% Permanent pastures: 16% Forests and woodland: 54% Other: 18% (1993 est.)	Arable land: 2% Permanent crops: 0% Permanent pastures: 22% Forests and woodland: 59% Other: 17% (1993 est.)	Arable land: 18% Permanent crops: 0% Permanent pastures: 9% Forests and woodland: 28% Other: 45% (1993 est.)
GDP - sector composition:	Agriculture: 46% Industry: 21% Services: 33% (1998)	Agriculture: 19% Industry: 20% Services: 61% (1997 est.)	Agriculture: 21% Industry: 12% Services: 67% (1998 est.)	Agriculture: 21% Industry: 12% Services: 67% (1998 est.)
Labour force occupation:	Agriculture and fishing 80% (1998 est.)	Agriculture 60%	Agriculture 80% Industry and services 20% (2000 est.)	Agriculture 75% Industry, commerce, and services 19% Government 6%

A. THE GAMBIA

Economic Overview

The Gambia has no important mineral or other natural resources and has a limited agricultural base. About 75% of the population depends on crops and livestock for its livelihood. Small-scale manufacturing activity features the processing of groundnuts, fish, and hides. Re-export trade normally constitutes a major segment of economic activity, but a 1999 government-imposed pre-shipment inspection plan, instability of the Gambian dalasi, and the stable political situation in Senegal have drawn some of the re-export trade away from Banjul. The government's 1998 seizure of the private groundnut firm, Alimenta, eliminated the largest purchaser of Gambian groundnuts; the following two marketing seasons have seen significantly lower prices and sales. A decline in tourism from 1999 to 2000 has also held back growth. Unemployment and underemployment rates are extremely high. Short-term economic progress remains highly dependent on sustained bilateral and multilateral aid, on responsible government economic management as forwarded by IMF technical help and advice, and on expected growth in the construction sector.

Summary country data

Location:	Western Africa, bordering the Atlantic Ocean and Senegal
Land boundaries:	Total: 740 km
Border countries:	Senegal 740 km
Coastline:	80 km
Maritime claims:	Contiguous zone: 18 NM Continental shelf: not specified Exclusive fishing zone: 200 NM Territorial sea: 12 NM
Climate:	Tropical; hot, rainy season (June to November); cooler, dry season (November to May)
Terrain:	Flood plain of the Gambia River flanked by some low hills
Elevation extremes:	Lowest point: Atlantic Ocean 0 m Highest point: unnamed location 53 m
Natural resources:	Fish
Land use:	Arable land: 18% Permanent crops: 0% Permanent pastures: 9% Forests and woodland: 28% Other: 45% (1993 est.)
Irrigated land:	150 sq km (1993 est.)
Natural hazards:	Drought (rainfall has dropped by 30% in the last 30 years)
Environmental issues:	Deforestation; desertification; water-borne diseases
Environment – International agreements:	party to: Biodiversity, Climate Change, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Nuclear Test Ban, Ozone Layer Protection, Ship Pollution, Wetlands signed, but not ratified: none of the selected agreements
Geography - note:	Almost an enclave of Senegal; smallest country on the continent of Africa

Age structure: 0-14 years: 45.22% (male 320,458; female 317,647)
15-64 years: 52.13% (male 364,900; female 370,717)
65 years and over: 2.65% (male 19,660; female 17,823) (2001 est.)

Birth rate: 41.76 births/1,000 population (2001 est.)

Death rate: 12.92 deaths/1,000 population (2001 est.)

Net migration rate: 2.59 migrant(s)/1,000 population (2001 est.)

Sex ratio: At birth: 1.03 male(s)/female
Under 15 years: 1.01 male(s)/female
15-64 years: 0.98 male(s)/female
65 years and over: 1.1 male(s)/female
Total population: 1 male(s)/female (2001 est.)

Infant mortality rate: 77.84 deaths/1,000 live births (2001 est.)

Life expectancy at birth: Total population: 53.59 years
Male: 51.65 years
Female: 55.58 years (2001 est.)

Total fertility rate: 5.68 children born/woman (2001 est.)

Ethnic groups: African 99% (Mandinka 42%, Fula 18%, Wolof 16%, Jola 10%, Serahuli 9%, other 4%), non-African 1%

Religions: Muslim 90%, Christian 9%, indigenous beliefs 1%

Languages: English (official), Mandinka, Wolof, Fula, and other indigenous vernaculars

Literacy: definition: age 15 and over can read and write
Total population: 47.5%
Male: 58.4%
Female: 37.1% (2001 est.)

Administrative divisions: 5 divisions and 1 city*; Banjul*, Lower River, Central River, North Bank, Upper River, Western

GDP: Purchasing power parity - $1.5 billion (2000 est.)

GDP - real growth rate: 4.9% (2000 est.)

GDP - per capita: Purchasing power parity - $1,100 (2000 est.)

GDP - sector composition: Agriculture: 21%
Industry: 12%
Services: 67% (1998 est.)

Inflation rate (consumer prices): 3.4% (2000 est.)

Labour force: 400,000

Labour force occupation: Agriculture 75%, industry, commerce, and services 19%, government 6%

Industries: Processing peanuts, fish, and hides; tourism; beverages; agricultural machinery assembly, woodworking, metalworking; clothing

Agriculture - products: Groundnuts, millet, sorghum, rice, corn, sesame, cassava (tapioca), palm kernels; cattle, sheep, goats; forest and fishery resources not fully exploited

Exports - commodities: Groundnuts and groundnut products, fish, cotton lint, palm kernels

Economic aid - recipient: $45.4 million (1995)

Highways: Total: 2,700 km
Paved: 956 km
Unpaved: 1,744 km (1996)

Waterways: 400 km
Ports and harbours: Banjul

B. GUINEA

Economic Overview

Guinea possesses major mineral, hydropower, and agricultural resources, yet remains a poor underdeveloped nation. The country possesses over 30% of the world's bauxite reserves and is the second largest bauxite producer. The mining sector accounted for about 75% of exports in 1999. Long-run improvements in government fiscal arrangements, literacy, and the legal framework are needed if the country is to move out of poverty. The government made progress in budget management in 1997-99, and reform progress was praised in the World Bank/IMF October 2000 assessment. However, fighting along the Sierra Leonean and Liberian borders causes major economic disruptions. In addition to direct defence costs, the violence has led to a sharp decline in investor confidence. Foreign mining companies have reduced expatriate staff, while panic buying has created food shortages and inflation in local markets. Real GDP growth is expected to fall to 2% in 2001.

Summary country data

Location:	Western Africa, bordering the North Atlantic Ocean, between Guinea-Bissau and Sierra Leone
Land boundaries:	Total: 3,399 km
Border countries:	Cote d'Ivoire 610 km, Guinea-Bissau 386 km, Liberia 563 km, Mali 858 km, Senegal 330 km, Sierra Leone 652 k m
Coastline:	320 km
Maritime claims:	Exclusive economic zone: 200 NM Territorial sea: 12 NM
Climate:	Generally hot and humid; monsoon-type rainy season (June to November) with south-westerly winds; dry season (December to May) with north-easterly harmattan winds
Terrain:	Generally flat coastal plain, hilly to mountainous interior
Elevation extremes:	Lowest point: Atlantic Ocean 0 m Highest point: Mont Nimba 1,752 m
Natural resources:	Bauxite, iron ore, diamonds, gold, uranium, hydroelectric power, fish
Land use:	Arable land: 2% Permanent crops: 0% Permanent pastures: 22% Forests and woodland: 59% Other: 17% (1993 est.)
Irrigated land:	930 sq km (1993 est.)
Natural hazards:	Hot, dry, dusty harmattan haze may reduce visibility during dry season
Environmental issues:	Deforestation; inadequate supplies of potable water; desertification; soil contamination and erosion; over-fishing, overpopulation in forest region
Environment – International agreements:	party to: Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Ozone Layer Protection, Wetlands, Whaling signed, but not ratified: none of the selected agreements
Age structure:	0-14 years: 43.12% (male 1,637,000; female 1,645,786) 15-64 years: 54.19% (male 2,015,199; female 2,110,745)

	65 years and over: 2.69% (male 84,586; female 120,554) (2001 est.)
Birth rate:	39.78 births / 1,000 population (2001 est.)
Death rate:	17.53 deaths / 1,000 population (2001 est.)
Net migration rate:	-2.63 migrant(s)/1,000 population (2001 est.) As a result of civil war in neighbouring countries, Guinea is host to almost half a million Liberian and Sierra Leonean refugees
Sex ratio:	At birth: 1.03 male(s)/female Under 15 years: 0.99 male(s)/female 15-64 years: 0.95 male(s)/female 65 years and over: 0.7 male(s)/female Total population: 0.96 male(s)/female (2001 est.)
Infant mortality rate:	129.03 deaths/1,000 live births (2001 est.)
Life expectancy at birth:	Total population: 45.91 years Male: 43.49 years Female: 48.42 years (2001 est.)
Total fertility rate:	5.39 children born/woman (2001 est.)
Ethnic groups:	Peulh 40%, Malinké 30%, Soussou 20%, smaller ethnic groups 10%
Religions:	Muslim 85%, Christian 8%, indigenous beliefs 7%
Languages:	French (official), each ethnic group has its own language
Literacy:	definition: age 15 and over can read and write Total population: 35.9% Male: 49.9% Female: 21.9% (1995 est.)
Administrative divisions:	33 prefectures and 1 special zone (zone special)*; Beyla, Boffa, Boké, Conakry*, Coyah, Dabola, Dalaba, Dinguiraye, Dubreka, Faranah, Forecariah, Fria, Gaoual, Gueckedou, Kankan, Kerouane, Kindia, Kissidougou, Koubia, Koundara, Kouroussa, Labé, Lelouma, Lola, Macenta, Mali, Mamou, Mandiana, Nzerekore, Pita, Siguiri, Telimélé, Tougué, Yomou
GDP:	Purchasing power parity - $10 billion (2000 est.)
GDP - real growth rate:	5% (2000 est.)
GDP - per capita:	Purchasing power parity - $1,300 (2000 est.)
GDP - sector composition:	Agriculture: 22.3% Industry: 35.3% Services: 42.4% (1998 est.)
Population below poverty line: 40% (1994 est.)	
Household income or consumption by % share:	Lowest 10%: 2.6% Highest 10%: 32% (1994)
Inflation rate (consumer prices): 6% (2000 est.)	
Labour force occupation:	agriculture 80%, industry and services 20% (2000 est.)
Industries:	bauxite, gold, diamonds; alumina refining; light manufacturing and agricultural processing industries
Agriculture - products:	rice, coffee, pineapples, palm kernels, cassava (tapioca), bananas, sweet potatoes; cattle, sheep, goats; timber
Exports:	$820 million (f.o.b., 2000 est.)

Exports - commodities:	bauxite, alumina, gold, diamonds, coffee, fish, and agricultural products
Railways:	Total: 1,086 km
Highways:	Total: 30,500 km Paved: 5,033 km Unpaved: 25,467 km (1996)
Waterways:	1,295 km (navigable by shallow-draft locally made craft)
Ports and harbours:	Boké, Conakry, Kamsar

C. MALI

Economic Overview

Mali is among the poorest countries in the world, with 65% of its land area desert or semi-desert. Economic activity is largely confined to the riverine area irrigated by the Niger. About 10% of the population is nomadic and some 80% of the labour force is engaged in farming and fishing. Industrial activity is concentrated on processing farm commodities. Mali is heavily dependent on foreign aid and vulnerable to fluctuations in world prices for cotton, its main export. In 1997, the government continued its successful implementation of an IMF-recommended structural adjustment program that is helping the economy grow, diversify, and attract foreign investment. Mali's adherence to economic reform and the 50% devaluation of the African franc in January 1994 have pushed up economic growth to a 5% average in 1996-2000. Growth should remain around 5% 2002, and inflation should stay less than 2%.

Summary country data

Land boundaries:	Total: 7,243 km
Border countries:	Algeria 1,376 km, Burkina Faso 1,000 km, Guinea 858 km, Cote d'Ivoire 532 km, Mauritania 2,237 km, Niger 821 km, Senegal 419 km
Climate:	Subtropical to arid; hot and dry February to June; rainy, humid, and mild June to November; cool and dry November to February
Terrain:	Mostly flat to rolling northern plains covered by sand; savanna in south, rugged hills in northeast
Elevation extremes:	Lowest point: Senegal River 23 m Highest point: Hombori Tondo 1,155 m
Natural resources:	Gold, phosphates, kaolin, salt, limestone, uranium and hydroelectric power. Bauxite, iron ore, manganese, tin, and copper deposits occur but are not exploited
Land use:	Arable land: 2% Permanent pastures: 25% Forests and woodland: 6% Other: 67% (1993 est.)
Irrigated land:	780 sq km (1993 est.)
Environmental issues:	Deforestation; soil erosion; desertification; inadequate supplies of potable water; poaching
Environment – International agreements:	party to: Biodiversity, Climate Change, Desertification, Endangered Species, Ozone Layer Protection, Wetlands Signed, but not ratified: Climate Change-Kyoto Protocol
Geography:	The country is landlocked, and divided into three natural zones: the southern, cultivated Sudanese; the central, semiarid Sahelian; and the northern, arid Saharan
Age structure:	0-14 years: 47.2% (male 2,612,215; female 2,583,370) 15-64 years: 49.73% (male 2,610,142; female 2,864,127) 65 years and over: 3.07% (male 158,486; female 180,178) (2001 est.)
Birth rate:	48.79 births/1,000 population (2001 est.)
Death rate:	18.71 deaths/1,000 population (2001 est.)

Net migration rate:	-0.36 migrant(s)/1,000 population (2001 est.)
Sex ratio:	At birth: 1.03 male(s)/female Under 15 years: 1.01 male(s)/female 15-64 years: 0.91 male(s)/female 65 years and over: 0.88 male(s)/female Total population: 0.96 male(s)/female (2001 est.)
Infant mortality rate:	121.44 deaths/1,000 live births (2001 est.)
Life expectancy at birth:	Total population: 47.02 years Male: 45.84 years Female: 48.24 years (2001 est.)
Total fertility rate:	6.81 children born/woman (2001 est.)
Ethnic groups:	Mandé 50% (Bambara, Malinké, Soninké), Peulh 17%, Voltaic 12%, Songhai 6%, Tuareg/Moor 10%, other 5%
Religions:	Muslim 90%, indigenous beliefs 9%, Christian 1%
Languages:	French (official), Bambara 80%, numerous African languages
Literacy:	Definition: age 15 and over can read and write Total population: 31% Male: 39.4% Female: 23.1% (1995 est.)
Administrative divisions:	8 regions; Gao, Kayes, Kidal, Koulikoro, Mopti, Segou, Sikasso, Tombouctou
Major and relevant International organization participation:	ACP, AfDB, ECA, ECOWAS, FAO, IAEA, IDA, IDB, IFAD, IMF, OAU, UN, WADB, WHO, WMO
GDP:	Purchasing power parity - $9.1 billion (2000 est.)
GDP - real growth rate:	4.8% (2000 est.)
GDP - per capita:	Purchasing power parity - $850 (2000 est.)
GDP - sector composition:	Agriculture: 46% Industry: 21% Services: 33% (1998)
Household income or consumption by % share:	Lowest 10%: 1.8% Highest 10%: 40.4% (1994)
Inflation rate (consumer prices): 0.8% (2000 est.)	
Labour force occupation:	Agriculture and fishing 80% (1998 est.)
Agriculture - products:	Cotton, millet, rice, corn, vegetables, peanuts; cattle, sheep, goats
Exports - commodities:	Cotton 50%, gold, livestock (1999 est.)
Imports - partners:	Cote d'Ivoire 19%, France 19%, Senegal 4%, Benelux 3% (1999)

D. SENEGAL

Economic Overview

In January 1994, Senegal undertook an economic reform programme with the support of the international donor community. This reform began with a 50% devaluation of Senegal's currency, the CFA franc, which is linked at a fixed rate to the French franc. Government price controls and subsidies have been steadily dismantled. After contracting by 2.1% in 1993, the economy of Senegal was revitalised, due to the reform programme, and had a real growth in GDP averaging 5% annually in 1995-99. Annual inflation was reduced to 2%, and the fiscal deficit cut to less than 1.5% of GDP. Investment rose steadily from 13.8% of GDP in 1993 to 16.5% in 1997. As a member of the West African Economic and Monetary Union (UEMOA), Senegal is working toward greater regional integration with a unified external tariff. Real GDP growth is expected to rise above 6%, while inflation is likely to hold at 2% in 2000-02. On the negative side, Senegal faces deep-seated urban problems of chronic unemployment.

Summary country data

Location:	Western Africa, bordering the North Atlantic Ocean, between Guinea-Bissau and Mauritania
Land boundaries:	Total: 2,640 km
Border countries:	The Gambia 740 km, Guinea 330 km, Guinea-Bissau 338 km, Mali 419 km, Mauritania 813 km
Coastline:	531 km
Maritime claims:	Contiguous zone: 24 NM Continental shelf: 200 NM or to the edge of the continental margin Exclusive economic zone: 200 NM Territorial sea: 12 NM
Climate:	Tropical; hot, humid; rainy season (May to November) has strong southeast winds; dry season (December to April) dominated by hot, dry, harmattan wind
Terrain:	Generally low, rolling, plains rising to foothills in southeast
Elevation extremes:	Lowest point: Atlantic Ocean 0 m Highest point: unnamed feature near Nepen Diakha 581m
Natural resources:	Fish, phosphates, iron ore
Land use:	Arable land: 12% Permanent crops: 0% Permanent pastures: 16% Forests and woodland: 54% Other: 18% (1993 est.)
Irrigated land:	710 sq km (1993 est.)
Natural hazards:	Lowlands seasonally flooded; periodic droughts
Environment - current issues:	Wildlife populations threatened by poaching; deforestation; overgrazing; soil erosion; desertification; over-fishing
Environment – International agreements:	party to: Biodiversity, Climate Change, Desertification, Endangered Species, Marine Life Conservation, Ozone Layer Protection, Ship

	Pollution, Wetlands, Whaling signed, but not ratified: Marine Dumping
Age structure:	0-14 years: 44.07% (male 2,279,996; female 2,252,255) 15-64 years: 52.88% (male 2,603,829; female 2,834,328) 65 years and over: 3.05% (male 155,877; female 158,644) (2001 est.)
Birth rate:	37.46 births/1,000 population (2001 est.)
Death rate:	8.35 deaths/1,000 population (2001 est.)
Net migration rate:	0.21 migrant(s)/1,000 population (2001 est.)
Sex ratio:	At birth: 1.03 male(s)/female Under 15 years: 1.01 male(s)/female 15-64 years: 0.92 male(s)/female 65 years and over: 0.98 male(s)/female Total population: 0.96 male(s)/female (2001 est.)
Infant mortality rate:	56.75 deaths/1,000 live births (2001 est.)
Life expectancy at birth:	Total population: 62.56 years Male: 60.94 years Female: 64.22 years (2001 est.)
Total fertility rate:	5.12 children born/woman (2001 est.)
Ethnic groups:	Wolof 43.3%, Pular 23.8%, Serer 14.7%, Jola 3.7%, Mandinka 3%, Soninké 1.1%, European and Lebanese 1%, other 9.4%
Religions:	Muslim 92%, indigenous beliefs 6%, Christian 2% (mostly Roman Catholic)
Languages:	French (official), Wolof, Pulaar, Jola, Mandinka
Literacy:	definition: age 15 and over can read and write Total population: 33.1% Male: 43% Female: 23.2% (1995 est.)
Administrative divisions:	10 regions (regions, singular - region); Dakar, Diourbel, Fatick, Kaolack, Kolda, Louga, Saint-Louis, Tambacounda, Thies, Ziguinchor
GDP:	purchasing power parity - $16 billion (2000 est.)
GDP - real growth rate:	5.7% (2000 est.)
GDP - per capita:	purchasing power parity - $1,600 (2000 est.)
GDP - sector composition:	Agriculture: 19% Industry: 20% Services: 61% (1997 est.)
Labour force occupation:	Agriculture 60%
Industries:	agricultural and fish processing, phosphate mining, fertilizer production, petroleum refining, construction materials
Agriculture - products:	Groundnuts, millet, maize, sorghum, rice, cotton, tomatoes, green vegetables; cattle, poultry, pigs; fish
Exports:	$959 million (f.o.b., 2000)
Exports - commodities:	Fish, groundnuts, petroleum products, phosphates, cotton
Exports - partners:	France 17%, India 17%, Italy 12%, Spain 6%, Mali 6%, Cote d'Ivoire 4% (1999)
Ports and harbours:	Dakar, Kaolack, Matam, Podor, Richard Toll, Saint-Louis, Ziguinchor

ANNEX 2K: Description of Endemic Ruminant Livestock in West Africa

(Significant additional information and statistics on endemic ruminant livestock in West Africa is available upon request).

The ruminant populations in the West and Central African in 1998 were estimated to be 60.93, 61.6 and 78.13 million cattle, sheep and goats, respectively. These were 32, 38, and 44% of sub-saharan African totals. Approximately 69, 85 and 77% of the cattle, sheep and goats in the West and Central Africa region were in West Africa and the balance in Central Africa.

Cattle

There were an estimated 10.57-million trypanotolerant cattle in West and Central Africa in 1998. These represented 17.3% of the entire cattle population, including those from Chad, Mauritania and Niger. If the cattle population from these three countries is excluded from the total on account of lying substantially out of the tsetse belt, the percent of trypanotolerant cattle was 20.7% as compared to 26.6% in 1985.

Overall, the trypanotolerant cattle population grew at 0.59% during the 14-year period (1985-1998) compared with 2.7% per annum for the total cattle population. In 1985, 48.4% of all trypanotolerant cattle were found in the four countries selected for the proposed project. In 1998, 46.6% of the trypanotolerant cattle were in these countries. This apparent decline resulted from a decrease in cattle population in Mali and a near zero population growth rate in Guinea.

The N'Dama cattle population in the West and Central Africa Region in 1998 was estimated to be 5.39 million head and constituted 10.6% of the total cattle population compared with 13.1% in 1985, when the N'Dama population was 4.86 million. In 1998, the N'Dama constituted an estimated 51.0% of the total trypanotolerant cattle population compared with 49.5% in 1985.

There were an estimated 2.51 million head of Savanna Shorthorn cattle in the West and Central Africa region in 1998. They constituted 4.7 and 23.7 % of the total cattle and trypanotolerant cattle population, respectively. In 1985, when they numbered 1.96 million head, the corresponding shares were 5.3 and 20%. Therefore, whereas the Savanna Shorthorns appear to have maintained their share of the total cattle population, their relative numerical importance in the trypanotolerant cattle population has decreased.

There were an estimated 0.133 million head of the Dwarf Shorthorns in 1998, a 34% increase over the 1985 population of 0.10 million head. The Dwarf Shorthorns represented only 0.26% of the total cattle herd and 1.26% of the trypanotolerant cattle population.

There were an estimated 3.63 million head of Zebu x N'Dama and Zebu x Shorthorn crossbreds in the West and Central Africa region in 1998. This represented 34% of the trypanotolerant cattle population and 7.1% of the total cattle population. In 1985, they constituted 29% of the trypanotolerant cattle population and 7.8% of the total cattle population. From 1985 to 1998, the crossbred population grew at an annual rate of 1.83%. The fastest growth occurred in Ghana (6%) for the " Sanga", Benin (3.2%) for the Borgu and in Cote d'Ivoire (3.7%) for the Mere.

Small Ruminants

There was an estimated 61.70 million head of sheep in the West and Central Africa Region in 1998. Approximately 12.78 million head of this total (20.1%) were found in Mauritania, Niger and Chad. Exclusion of the sheep populations in these countries from the analysis leaves the total sheep population at an estimated 48.93 million head. An estimated 15.78 million head (32%) were considered trypanotolerant, but the portion of purebreds is unknown.

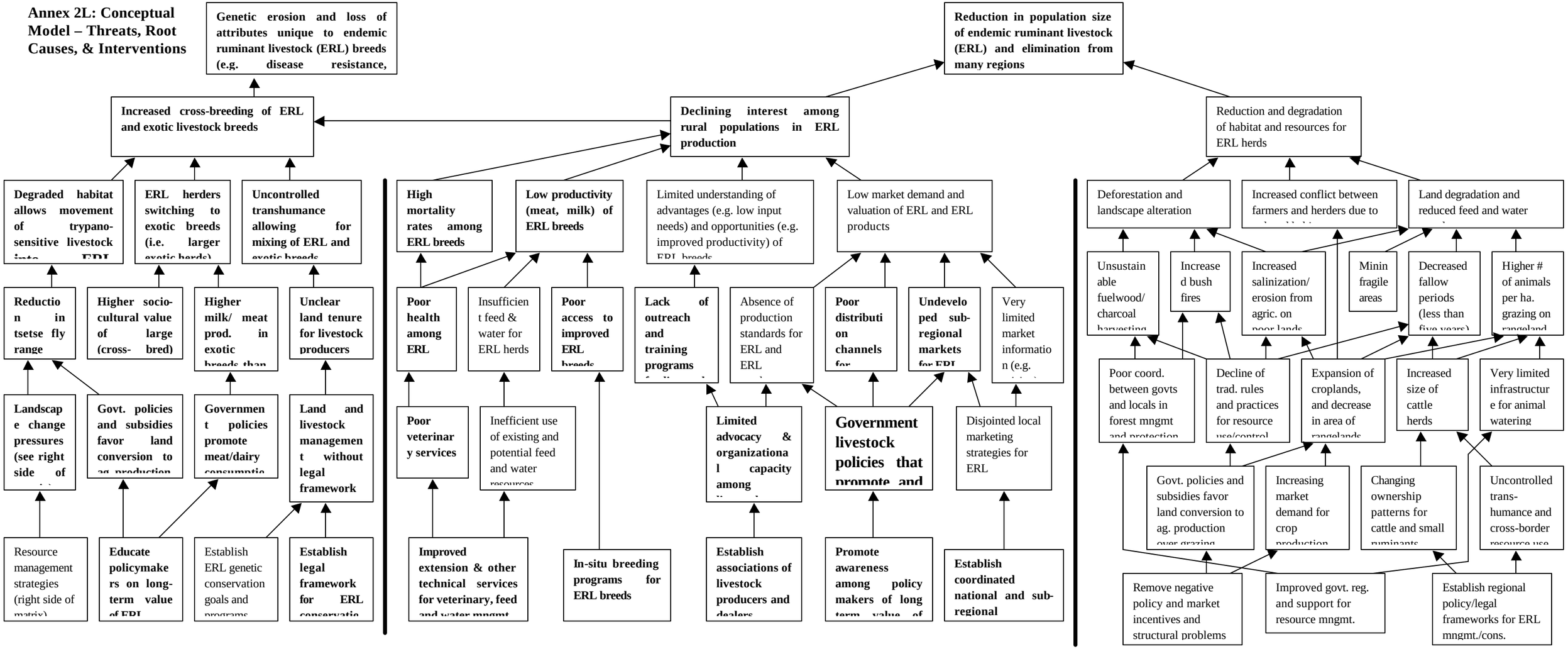
In 1998, there was an estimated 78.13 million head of goats in the West and Central Africa Region. Approximately 15.41 million head of this total (19.7%) were found in Mauritania, Niger and Chad. If the goat populations in these countries are excluded from the analysis, the total goat population comes to an estimated 62.72 million head. An estimated 29.39 million head (46.9%) were considered trypanotolerant, but the portion of purebreds is unknown.

Table 1: Traits and distribution of endemic cattle in Western and Central Africa

Major breeds	Heads of cattle (millions)	% of breed in total population	*Original traits* Trypanotolerance	Resistance to ticks and transmitted diseases	Resistance to endoparasites	Endangered
Bos indicus (Zebu)	48.0	78.0	-	-	*	-
Bos taurus						
Longhorn cattle	5.3	8.7	***	**	**	-
(N'dama)	2.5	41	**	**	**	Doaya, Kapsiki, Bakosi
Savannah shorthorns (Baoulé, Méré, Somba, Muturu, Doayo, Kapsiki, Bakosi)	1.5	2.5	**	**	**	Liberia muturu Ghana muturu
Dwarf shorthorns (Lagune and Muturu)						
Derived/Composite Breeds: Sanga Borgou, Djakoré,	3.5	5.7	*	*	*	Kétéku

Kétéku and Bamabara						

Annex 2L: Conceptual Model – Threats, Root Causes, & Interventions



ANNEX 2M: Description of Baseline Activities in Each Country

Section 1: Summary of Baseline Projects

Table 1: Summary of Projects Related to In-Situ Conservation of Endemic Ruminant Livestock in the Gambia (acronyms listed at end of annex)

Project or Program Title	Objectives and activities	Time frame	Budget	Executing agencies	Donor agencies	Activities relevant to project	Gaps and/or contradictions
National level							
Rural finance community initiative project	Provide credit to livestock farmers to increase small ruminant and poultry production	2000 - 2005	Not available	Dept. of Livestock Services	IFAD	Credit to farmers to intensify production systems and improve marketing	May have adverse incentives to encourage farmers to import exotics
Improving Milk Safety and Farmers Income Using the Village Milk System	Crossbreeding program to supply high milk yielding cattle to local farmers, in order to reduce imports of milk and dairy products by producing, processing and marketing local surplus milk	Not availabl e	Not available	Dept. of Livestock Services	FAO	Supplying improved cattle breeds to local farmers, and improving their access to markets	Limited to greater Banjul area
Peri-Urban Smallholder Improvement Project	Increasing output, income and household food security through small ruminant and vegetable production	July 2000 - July 2005	US$5.72 million	Dept. of State for Agricultur e (DOSA)	AfDB	Establishment of small scale livestock prod. units, development of fodder & water supply, construction of small-scale slaughter facilities	No emphasis on endemic breeds; might promote exotics and / or cross-breeding
Integrated Livestock Production Project (ILPP) and Livestock Services Support Project (LSSP)	ILPP will improve production of domestic animal species, feed regimes, traditional and semi-intensive, and commercial enterprises; LSSP will strengthen support services for livestock producers, with focus on marketing, critical inputs supply, and training	2002 - 2007	Not available	Dept. of Livestock Services	AfDB	Project activities will motivate and promote the use of endemic livestock	Focus limited to production inputs
Regional level							
Pan African Control of Epizootics (PACE)	Eradication of rinderpest and creation of a Pan African Network for the control of epizootics	May 2001 - May 2006	US$1.59 million	Dept. of Livestock Services	European Union	Enhance the capacity of the Department of Livestock Services in the area of disease surveillance and control	Health focus only on epizootic diseases
Research and Development	Research and development activities related to animal health, animal	Not availabl	Not available	Internatio nal	European Union	Genetic Improvement of Trypanotolerant Livestock	Limited impact by focusing only on

Project for Livestock Farming in West Africa (PROCORDEL)	production, and socio-economics in both low input and market oriented production systems	e		Trypanotolerance Centre		(N'dama cattle, Djallonke sheep, and West African Dwarf goats) through Pure Breeding Programs	breeding bulls
Sustainable utilization and management of the water resources of the Gambia River Basin	Encompasses 4 countries: Senegal, Guinea, Guinea Bissau, and the Gambia, including the protection of its source (Fouta D'Jallon Highlands)	Not availabl e	Not available	OMVG	AfDB, EU, BADEA	Focus on development of irrigation agriculture and hydroelectric power	

Table 2: Summary of Projects Related to In-Situ Conservation of Endemic Ruminant Livestock in Guinea

Project or Program Title	Objectives	Primary Activities	Time frame	Area of activity	Executing Agency & Partners	Budget	Funding Agency	Activities linked to the project	Gaps or contradictions
PDRI Fouta Djallon	Raise the standard of living and food security of local populations	• Rural stockyards • Pasture improvements • Hydrological management	1998-2002	Mali and Lélouma provinces	MAE/BCEPA	US$9.62 million	IDB BND	- Pasture improvement - Hydrological management	
Project for Support of Subsistence Farmers of North Guinea (PAPE/BGN)	Improve production systems, food security and standards of living and income; protect the environment, and reinforce institutions	• Establish baseline institutions • Support to producers (studies, research, testing of techniques) • Strengthening of rural and social infrastructures • Monitoring and evaluation of activities	1997-2004	Télimélé, Fria, Boké, Boffa, Dubréka provinces	MAE/BCEPA	US$21.93 million	FIDA OPEP BND	- Testing of production techniques - Strengthening of rural and social infrastructures	
Program of agricultural rehabilitation and support for local development in Fouta Djallon (PRAADEL)	Improve standards of living; promote sustainable use of natural resources, and strengthen local development	• Improve productivity, production, and commercialization • Sustainable participatory land management • Strengthening of existing institutions • Implementation of self-sustaining financial systems	1998-2005	Mali, Koubia, Tougué, Lélouma, Labé Nord provinces	MAE/BCEPA	US$18.2 million	FIDA OPEP BND	- Participatory land management -Implementation of self-sustaining financial systems	Activities favoring animals are ignored, despite the importance of pastoralism in the area
PDRI Dubréka	Elevate standards of living and food security of the population	• Credit development • Rural infrastructure • Creation of associations • Small ruminant production	1999-2004	Dubréka (Locale)	MAE/BCEPA	US$11.48 million	IDB BND	- Creation of associations	
Project for Integrated Rural Development in Upper Guinea	Improve land management and rural development infrastructure	• Management of 1,000 hectares of plains and lowlands • Creation of 223 km of rural roads and 100 watering points	2003-2007	Dinguiraye et Kouroussa	Not available	US$11.54 million	IDB Govt. of Guinea	- Development of watering points (area adjacent to project pilot site)	
Participatory Program for Rural Development in Upper Guinea (PPDR	Support the formation of baseline associations; improve standards of living; promote	• Capacity strengthening and organizational development for sustainable resource management and improved production • Improved access to credit • Development and diversification	2001 – 2010	Kankan Mandiana Kérouané provinces	MAE /BCEPA	US$1.43 million	FIDA BND	- Creation of access to credit - Creation of financial associations	Could favor the introduction of Zebus cattle in the frontier zone

HG)	on-farm production	of production systems, and improvement of production infrastructure							with Mali
Project of Support for Rural Development in Upper Guinea (PADER-HG)	Improved production; support for creating collectives; opening up of lands	• Hydro-agricultural management • Improvement of technical strategies • Opening up of lands (rehabilitation and maintenance of rural paths, construction of bridges) • Support for creating rural collectives	2001 – 2005	Kouroussa Siguiri provinces	Unité de Gestion du Projet (UGP) BCEPA, branch offices	US$16.38 million	FAD BND	- Support for animal draught power	Focus on animal draught power will demand stronger animals, which may prompt cross-breeding with Malian Zebu
Pan African Control of Epizootics (PACE)	Institutional capacity strengthening for epizootic surveillance; improved accessibility and distribution of services; fight against bovine pests; control of PPCBs and other epizootics	• Epidemiological surveillance, implementation of health committees • Integration of national structures • Transfer of responsibilities away from public agencies • Participation of beneficiaries and cost recovery	2000-2004	Upper Guinea	DNE	US$2.20 million	FED BND	Epidemiological surveillance of livestock	
Program of Support for the Livestock Sub-Sector (PASEL)	Reinforce livestock management; improve efficiency of producers in professional organizations	• Institutional support (collection and processing of data) • Creation of regional observatories • Strengthening of animal health framework (public veterinaries, disease control, support to private veterinaries) • Development of branches of animal production (agriculture-livestock integration, genetic improvement, milk production improvement, peri-urban livestock development) • Development of herders	2001 - 2005	Nationwide	DNE	US$9.76 million	FED	- Genetic improvement - Milk production improvement	Enviromental protection activities are not apparent; improvement of milk production using exotic genes

		associations							
Program of Support of Village Communes (PACV)	Strengthen institutional and financial capacities of local administrations and direct their development; allow for the implementation of communal infrastructures	• Improve regulatory, institutional and fiscal conditions and promote decentralized development capacity • Establish an efficient system for the transfer of funds to local communities • Promote the rehabilitation of rural infrastructure	1999-2010	Nationwide	Secretary of State for Decentralization	US$0.19 million	IDA FIDA, AFD, ADF BND	- Improvement of regulatory conditions	The slowness of developing procedures and implementation of rules
AGIR	Support the integrated management of natural resources for conservation and ecosystem restoration; improve standards of living for local populations	• Natural resources management and rural development • Support for implementation of protected areas • Transboundary and regional programs for livestock raising • Management of conflicts • Studies of livestock raising • Identification of alternative zones • Creation of hydraulic pastoral infrastructure	2000-2004	Central and Upper Guinea (forested areas)	DNEF	US$21.96 million	FED PIN FED PIR	Stabilization of buffer zones around protected areas	Creation of protected areas could contribute to reduce habitat for livestock
PEGRN	Ensure the adoption of sustainable management practices for natural resources	• Implement natural resource management committees • Develop management plans • Awareness raising and education	2000 – 2005	Central Guinea	DNEF	Not available	USAID	Management of natural resources	
Project to fight against animal trypanosomosis (PLTA)	Improvement of incomes for farmers and herders	• Trypanosomosis control • Improved production • Strengthening of infrastructure and equipment	2000-2005	Nationwide	DNE/ LCVD	US$0.24 million	FED BND	Trypanosomosis control	
Research and Development Project for Livestock Farming in West Africa (PROCORDEL)	Research strategies based on criteria developed by beneficiaries for livestock production	• Genetic improvement for milk production • Food production research • Study of pathology complex “Woula” • Study of milk quality	2000-2004	Regional	IRAG/ Coordination for Livestock Research	US$11.96 million (regional)	FED	- Genetic improvement of milk production - Study of pathology complex “Woula”	Genetic improvement program could constitute a threat to local livestock

Project for Sustainable Agricultural Development in Guinean forestry (PRODAD)	Improve the living conditions and incomes of farmers through sustainable agriculture development	• Implement landscape management committees • Improve productivity of exploitation systems • Diversify revenue sources • Facilitate access to financial services by strengthening financial services associations	2003 – 2012	Not available	MAE/BCEPA	US$12.50 million	FIDA and BND	Land management	
Integrated Rural Development Project of Télimélé	Increased productivity, production and commercialization to support rural development	• Creation of rural infrastructure • Support for agricultural and animal production • Improved infrastructure (roads, potable water points) • Promotion of producers organizations • Development of long-term system of self-sustaining local financial services	2003 - 2009	Not available	MAE/BCEPA	US$16.50 million	BID OPEP BND	- Support for agricultural and animal production	

Table 3: Summary of Projects Related to In-Situ Conservation of Endemic Ruminant Livestock in Mali

Program or Project Title	Summary of Objectives	Time frame	Budget	Executing Agencies	Donors	Activities linked to the Project	Gaps or Contradictions
Project to support seed production	Increase the production and use of selected seeds	2001 - 2006	US11.15 million	Public services, territorial collectives, NGOs, socio-professional organizations, and others	FAD GRM	- Identification of seed producers - Training of farmers in seed production techniques	
Project of support for decentralized collectives	Fight against poverty	2001 - 2004	Not available	Public services, territorial collectives, NGOs, socio-professional organizations, and others	NA	Contribution to the improvement of incomes for under-privileged communities	
Program for reforestation	Facilitate access to credit for agricultural equipment for reforestation	1999 - 2009	US$1.00 million	DAF of MDRE	Govt. of Netherlands	Facilitating access to credit for agricultural equipment for rural inhabitants	
Project of Agricultural Research	Support IER and its clients in designing and implementing a research system	1999 - 2005	US$8.46 million	IER	Govt. of Netherlands GRM	Identification of research activities appropriate to each area of the country	
Program of support to agricultural services and farmers/herders organizations	Improve the living conditions of rural inhabitants and strengthen the capacity of the Ministry of Rural Development	2002 - 2005	US$11.06 million	PASAOP Farmers/herders organizations	IDA Govt. of Netherlands GRN	Support for farmers/herders organizations, and strengthening of structural capacities	
National Program of Rural Infrastructure	Ensure the sustainable development of rural areas	2001 - 2011	Not available	Not available	Not available	Implement infrastructure for irrigation, potable water and rural roads	
Regional Action Program of Sikasso (PARS)	Contribute to the conservation of natural resources in the region of Sikasso	Not available	Not available	CMDT IER DNAMR PNLCD FAO (Forests and Food Security) APROFA BHP BNDA NGOs (AFVP, HELVETAS)	Not available	- Village level participatory forest management - Pasture improvement - Agroforestry - Awareness raising and training of locals in animal protection and soil conservation, land management, and firewood and charcoal harvesting, - Implementation of village management committees	

Integrated Development Program in Madina Diassa	Improve incomes and living conditions of N'dama cattle producers	2001-04	Not available	ONDY (livestock raising and animal health service)	CEDEAO GRM Local populations	- Increase the productivity of selected cattle - Improve livestock commercialization - Strengthen monitoring and sanitary protection - Fight against poverty and strengthen access to bank loans - Support the transfer of resources to N'dama cattle producers - Improve animal production systems	Insufficient veterinary services
Project of Integrated Rural Development of Kita (PDRIK)	Increase farmers incomes, in particular women, through cotton production; contribute to the food security of the Kita area; and increase the production of export products and the country's balance of payments	2005	Not available	DNAMR DNAER MAEP	IDB OPEP GRM	- Management of resources to allow for improved production of endemic animals - Protection of biodiversity hotspots - Improvement of rural roads to facilitate exchanges of endemic livestock - Loans of diverse equipment	- Improvement of rural roads will permit and facilitate contact between livestock breeds, which could reduce trypanotolerance - Scarcity of appropriate animals could reduce loan volumes - Failure to take into account the lack of private pharmacies and clinics
Project for Agro-ecology	Equip rural inhabitants with materials to combat land degradation	Not available	Not available	LAE / CLAE project	KFW	Conservation of endemic livestock habitat	

Table 4: Summary of Projects Related to In-Situ Conservation of Endemic Ruminant Livestock in Senegal

Program or Project Title	Summary of Objectives	Time frame	Budget	Executing Agencies	Donors	Activities linked to the Project
Pan African Control of Epizootics (PACE)	Control of major epizootic diseases, in particular rinderpest and contagious bovine pleuropneumonia	2000 - 2004	**US$2.04 Million**	**BIRA/ OUA** **DIREL**	European Union	- **Implementation of epidemiological surveillance systems** - **Privatization of services to livestock herders** - **Improvement of rural health conditions**
Program of Agricultural Services and Support to Producer's Organizations (PSAOP)	**Institutional reforms and capacity strengthening in support of rural organizations**	**2000 - 2004**	**US$3.09 million**	**Ministry of Agriculture and Livestock**	World Bank	- **Creation of local coordinating units** - **Strengthening of agricultural councils and citizens organizations** - **Strengthening of decentralization services**
Project for Communal Management of Biodiversity (PICCB)	**Biodiversity conservation and capacity strengthening**	**2003 - 2013**	**US$37.12 million**	**Ministry of Environment**	UNDP-GEF Govt. of Netherlands	- **Capacity strengthening for natural resources management** - **Support for income generating activities**

	Planning, restoration and management of natural resources	**2003 - 2013**	**Not available**	**Department of Water and Forests**	Govt. of Netherlands	- **Implementation and harmonization of regional management plans for natural resources** - **Support for firefighting and reforestation** - **Education and training for local inhabitants in firefighting** - **Capacity strengthening for natural resources management**

Project to Promote Rural Micro-enterprises (PROMER)	Capacity strengthening and rural credit	2005	US$7.42 million	Ministry of Agriculture	FIDA-BOAD	- **Improve access to credit for financing of rural micro-enterprises** - **Capacity strengthening**
Program for the Fight Against Poverty (PLCP)	Revenue generating activities related to natural resources management	2005	Not available	Ministry of Social Development	FAD et FND	- **Capacity strengthening for management** - **Support for micro-financing and revenue generating activities** - **Implementation of hydrological infrastructure**
Organization for the Management of the Gambia River (OMVG)	Management of water resources and poverty reduction	2003 -	US$31.54 million	OMVG and Govt. of Guinea	BAD EU BADEA	- **Development of revenue generating activities for livestock herding and natural resources management (Wassadou)**
Society for Agricultural Development in the Anambe basin (SODAGRI)	Capacity strengthening for agriculture and hydrological management	2002 - 2008	US$29.96 million	SODAGRI Ministry of Agriculture	FAD BID	- **Capacity strengthening** - **Poverty reduction and revenue generating activities** - **Construction and management of hydrological infrastructure**

Section 2 – Descriptions of Key Baseline Projects

Key Baseline Projects Related to In-Situ Conservation of Endemic Ruminant Livestock in The Gambia

a. Pan African Control of Epizootics (PACE)

This is five-year regional programme funded by European Union. It is aimed at final eradication of rinderpest and the setting up of a Pan African Network for the Control of Epizootics. The specific goal of the programme is to combat poverty among those involved in livestock farming by improving animal productivity through a series of coordinated animal health care strategies.

The four main thrusts of the programme are:

- To enhance the capacity of the Department of Livestock Services in the area of disease surveillance
- To improve veterinary services and drug delivery through greater privatization and coherent linkages between the public and private sectors
- To fight against rinderpest, based on ceasing vaccination and fulfilling the OIE pathway for being declared free from the diseases, including active search for the disease, strengthening the surveillance network and setting up rapid response system
- To improve the control of other epizootic diseases based on full cost recovery.

Euro 230,769 was approved to implement the development programme for the first year, 1st May 2001 to 31st April 2002. The main activities implemented during the first year include procurement of office equipment and consumables, vehicles, sampling kits and laboratory consumables; training and sensitization of the core staff and other stakeholders; conduct of baseline studies; and the preparation of emergency preparedness plan and development of epidemiosurveillance and disease reporting system.

The second annual work programme and cost estimates (1st November 2002 to 31st October 2003) are expected to consolidate the gains of the first year and expand the scope of the programme, especially in the area of privatization, disease surveillance, and decentralization of laboratory investigations. Euro 276,748 has been approved.

b. Research and Development Project for Livestock Farming in West Africa (PROCORDEL)

This is another European Union funded regional project being implemented in The Gambia by International Trypanotolerance Centre. Research and development activities being undertaken in The Gambia are related to animal health, animal production, and socio-economics in both the low input and market oriented production systems.

In order to increase the productivity of the N'dama, without eroding its trypanotolerance and other adaptive traits, ITC is implementing a Genetic Improvement of Trypanotolerant Livestock - Pure Breeding Programme. In close collaboration with the Department of Livestock Services, Purebred Ndama bulls have been selected, based on their trypanotolerance and daily weight gains, and provided on credit (D9/Kg or US$ 0.33/Kg liveweight) to selected farmers in different parts of the country. Participating farmers are required to remove all other bulls from the herd. Considering the low number of bulls in relation to the cattle population, the expected impact of the programme appears to be limited. The continued exploitation of the Ndama breed will ensure diversification of the agricultural production base. The Ndama's full meat potential can be exploited provided that the feeding regimes are appropriate, and that the animals are slaughtered at the optimal age.

Similar to the purebred bull initiative, breeding rams and bucks are being selected in the Pure Breeding Programme for West African Dwarf goats and Djallonke sheep. The animals are selected based on their trypanotolerance and daily body weight gains, and placed in selected villages throughout the country. Farmers receiving the breeding males commit themselves to withdraw all other small ruminant males from their flocks. This is a particularly important activity as there are indications that these indigenous breeds are on the decline due to their high commercialization, crossbreeding with Sahelian breeds.

c. Improving Milk Safety and Farmers Income Using the Village Milk System

The Department of Livestock Services, in collaboration with ITC, is implementing a crossbreeding programme in the low tsetse challenge Greater Banjul Area, supplying high milk yielding cattle to local farmers. This program is a project of the Food and Agricultural Organization, Technical Cooperation Programme –TCP. The aim is to reduce imports of milk and dairy products by producing, processing and marketing local surplus milk. Studies have been carried out on the hygienic quality of milk sold locally, and a public health risk for consumers was identified, requiring an improved processing and marketing system for safe fresh milk in peri-urban areas. By linking the lactoperoxidase system and the proven low cost and safe milk processing technologies of FAO, small scale farmers in The Gambia can have access to ready urban markets for their milk and dairy products. The project activities and design are market led and community driven for the benefit of consumers and small-scale producers and processors.

The objective of the Technical Cooperation Programme (TCP) is to improve the safety of milk and dairy products in the Greater Banjul Area.

The more specific objectives are as follows:

- To establish two in-pouch milk pasteurizing cum Collection Centres with selected farmers
- To introduce the Lactoperoxidase system to farmers to enable them to supply surplus milk to the Collection Center
- To establish a Demonstration in-pouch milk pasteurizing unit cum Training Centre at ITC.

It is expected that the project will trigger off demand in the private sector to take up the technology / approach and spread it to other parts of the country (growing center) and the sub region. Other expected outputs include:

- A demonstration low-cost in-pouch milk pasteurising and Training Unit established at ITC, running training courses in milk processing and improved dairy animal husbandry, milk hygiene and processing technology. First batch of equipment will arrive in December 2002 / January 2003.
- Increased income for farmers (milk producer groupers/associations) should be realized through the sale of improved quality safe fresh milk and milk products tailored to market demand.
- Increased public awareness of the advantages in terms of quality and safety of nationally milk and dairy products and recommendations to Government for an action/investment plan to duplicate the system on other parts of the country for small-scale dairy enterprises.
- A study tour will be organized to a country in the region having a more advanced small scale dairy processing sector

d. Rural Finance and Community Initiative Project (RFCIP)

Under the IFAD funded RFCIP, a series of activities are embarked upon with the aim of boosting small ruminant and village poultry production. The project provided initial capital to procure Pest de Petit Ruminants and Newcastle Disease vaccines and funded a mass vaccination campaign in Central River and Lower River Division in the year 2000. In 2001 the project again procured vaccines and funded a nationwide campaign for the above-mentioned diseases. Cost recovery returns from the campaigns have been saved in various Village Savings and Credit Associations (VISACAS) and form a revolving fund for future vaccinations to be managed by the farmers in collaboration with the Department of Livestock Services (DLS) and the RFCIP.

Training is another activity being supported by RFCIP. The project provides funds for DLS to train livestock village auxiliaries who will assist poultry and small ruminant farmers at village level.

e. Peri Urban Small Holder Improvement Project (PUSIP)

This is an African Development Bank and Gambia Government funded project, which is supposed to last for five years (with effect from July 2000) and will cost about UA 5.72 million. The project areas of intervention are the Western and North Bank Divisions. The project aims to contribute to the agricultural sector goals of increasing output, income and household food security through small ruminant and vegetable production.

The Department of State for Agriculture is the executing agency. There is a Project Coordinating Unit headed by a Coordinator who is assisted by three sub-component overseers for livestock, horticulture, and water control. A Steering Committee (with the Permanent Secretary, DOSA) has been established to provide guidance to the project.

The activities to being undertaken by the project include: (i) horticulture: development of irrigation infrastructure, marketing, provision of portable water supply and improved sanitation; (ii) livestock: setting up of small scale production units, development of fodder and water supply, construction of small scale slaughter facilities; and (iii) capacity building: strengthening of women's groups, training of women auxiliaries and extension and livestock services staff.

During the first year of project implementation, emphasis was placed on selection and sensitization of target groups and training of government extension workers who will be attached to the project followed by a four year implementation period based on the demand –driven mechanism. Various income generating livestock activities will be phased over the project period.

The project has so far established fodder tree plantations to improve feed availability (specially during the dry season), twenty nine poultry production schemes, ten rabbit production schemes, ten pig breeding schemes, and ten sheep and goat breeding and fattening schemes.

The project will consolidate its achievements and expand into other villages based on demand. A loan scheme has been established and communities interested in establishing livestock income generating activities can access loans from the various micro-credit organizations.

f. Integrated Livestock Production Project (ILPP) and Livestock Services Support Project (LSSP)

The Integrated Livestock Production Project covers the needs and constraints of livestock farmer groups in the rural and peri-urban areas. The project is subdivided into four components, encompassing all domestic animal species, feed regimes, traditional and semi-intensive, commercial enterprises, and will be largely credit driven. A pilot research component will closely evaluate particular production systems for farmers to take up.

Indicative models have been prepared to determine the technical feasibility and the likely financial benefits of producing all types of livestock, often under a range of conditions.

The Livestock Services Support Project has six components and is designed to strengthen support services for livestock producers. In particular it focuses on marketing, critical inputs supply and training. The proposed modern abattoir complex is likely to create an opportunity for increased revenue flows to be generated by cross-border trade.

Both of these projects were developed originally through an African Development Bank grant of UA576,950 to the Government of The Gambia to conduct a comprehensive study of the livestock sub-sector and to prepare two priority bankable projects. The Livestock Development Study was implemented in two distinct phases. The first phase, Review and Diagnostic Study, lasted for four months (April to July 2001) and was principally geared to reviewing existing documentation, diagnostic surveys and learning lessons from past projects. Phase 1 culminated in a National Stakeholders' Workshop at which the findings and a strategic development plan for the livestock sub-sector were discussed. The second phase of the Study lasted for three months (October to December 2001) and focused on the feasibility and detailed design of two distinct, but mutually inclusive, projects based on the results obtained in Phase 1. The proposed projects were presented to the stakeholders at a two-day workshop.

The two proposed projects that will be implemented over a five-year period will build on the results obtained from the past and on-going projects. They will gradually intensify and diversify the livestock production base in order to ensure efficiency and balance between livestock numbers and the environment. The activities will motivate and promote the use of endemic livestock, consolidate and broaden on-going activities with a view to significantly increase incomes of smallholder livestock keepers through profitable sales of livestock products.

For the most part the technologies proposed in the projects for increased livestock production and productivity have been selected by the beneficiaries themselves. The effective empowerment of the poor farmers through offering opportunities that they have largely requested and helped to design, will reduce risk of project failure and engender a much higher sense of responsibility.

Farmers have relatively low technology and low risk "entry level" loan opportunities on which they can rapidly generate production and income levels to rise above subsistence and periodic food security deficits yet, many options for expanding technologically upwards are available. Equally, by addressing the major factors of production risks farmers will be able to repay their loans and make a modest profit.

The projects are a bold nationwide plan to move farmers into genuine state of sustained improved livelihood through efficient resource management utilizing scarce funds through a revolving credit fund. The projects have a broad scope both in diversity of profitable production choices as well as in its range of technical sophistication. Farmers with modest means and limited experience can still become involved with livestock rearing to satisfy their subsistence needs and asset accumulation. A National Livestock Project Management Unit will implement the projects. The unit will be headed by a Project Coordinator and supported by existing staff of the Department of Livestock Services.

Key Baseline Projects Related to In-Situ Conservation of Endemic Ruminant Livestock in Guinea

a. PACE – Pan-African Control of Epizootics. 2000 for 5 years. Donor: EU

The project consists largely of surveillance activities with Rinderpest being a priority. The last rinderpest outbreak in Guinea was in 1967. There was a massive vaccination campaign of the National herd combined with vaccination against CBPP. The situation now is that no case has been reported for some time. Vaccination stopped in 1994 and the country was declared free of Peste Bovine. All PACE activities are related to this. These activities include random sampling of 314 herds, representing the national herd. Active surveillance based on FAO/IAEA document for serological surveillance.

- ***Lutte Contre la Peste Bovine*** – (Rinderpest control): A plan of intervention has been elaborated, approved and activities will start in 2003. These activities will comprise of active search for signs of the disease over a period of 6 months – diarrhoea, enteritic stomatitis. It is 8 years since the vaccination campaign so antibodies will no longer be found. There is a movement towards surveillance rather than monitoring. Passive surveillance is also being developed on the 314 herds. The project will establish zero prevalence at the 95% confidence level if no positive cases are detected using the test. The test will be carried out on 56 animals.
- ***L'Appui au Service Publique*** -(Support to Public Services)***:*** This project is to provide capacity to carry out the epidemiological surveillance. It also assists in privatisation and data management. Service is given to livestock owners based on privatisation of vets. The process will continue next year. Control of other diseases CBPP, foot and mouth disease and PPA (Peste Porcine Africaine) that did not exist before in the forest zone. There are four areas in which the PACE project functions:

b. Projet d'Appui à l'élevage en Guinée Moyenne à Forestière (PAE) 2000 for 4 years. Donor: AFD

The objective of this project is to organise livestock owners in to groups and to put in place marketing pathways.

c. Composante Elevage et Gestion des Ressources naturelles du Programme Dabola-Dinguiraye (PDD). 2000 for 4 years. Donor: EU

To significantly increase animal production in the project zone and sustainably manage natural resources through assistance to peasant associations.

d. Projet d'Appui au Secteur Elevage (PASEL). 2002 for 5 years. Donor: EU

The project consists of five parts. It will reinforce the limited activities of PACE by covering more areas of intervention.

- Institutional support: – to public services to work in areas of development
- Support to Animal Health: - to develop a health network. The private sector is developing along with the public sector and also organisations of livestock owners. It will work in the area of animal health. All health programmes, which do not have private veterinarians, participate in a synergistic way with the state, working at the sub-prefecture level. DNE is responsible for its activities but there are difficulties in implementation.
- Animal Production and the Environment
- Renforcement des Organisations Paysanne Eleveurs. The purpose of this activity is the development of associations of livestock owners – these associations are expected to provide greater possibilities for livestock owners to resolve their problems. As individuals they often they don't know who to go to for assistance.
- Développement des filières d'alimentation. This activity undertakes genetic improvement of livestock.

e. Composante Elevage du Programme Guinée Maritime 3. 2002 for 4 years. Donor: EU

The purpose of this project is to secure animal and agricultural production in Guinea maritime whilst preserving the productive resources and favouring a better crop-livestock integration allowing the beneficiaries to improve their management capacity.

f. Composante Elevage du Projet National des Services Ruraux (PNSR). 2003 for 2 years; Donor: IDA

Contribute to poverty reduction, focussing on increased animal production through improved access to inputs, credit *etc*.

g. Projet Trypanosomiase. 2002 for 5 years; Donor: EU

Use of strategic integrated and community managed control of animal trypanosomiasis in order to increase animal production.

Key Baseline Projects Related to In-Situ Conservation of Endemic Ruminant Livestock in Mali

a. Projet du centre communautaire de production de géniteurs bovins de Madina Diassa au Mali

The project 'Opération N'Dama Yanfolila' (ONDY), supported by EDF and Malian funds, was launched in 1973 with three successive phases. The first phase attempted to increase the productivity of N'Dama cattle in the *Cercle de Yanfolila* through improved feeding and husbandry systems. During the second phase of the project more emphasis was given to the genetic improvement of N'Dama cattle through selective breeding on-station. The third phase of the project was marked by the transfer of the management of the breeding programme to Mali nationals and by the relocation of the breeding herd from the station to villages with farmer's management. A total of 185 breeding N'Dama females and 29 N'Dama bulls were given to 136 head of households. Farmers that benefited from the transfer scheme put in place village associations (55 associations were formed) that pooled their cattle herd for a better management of grazing resources.

Main achievements of the previous phases of the project include (1) the development of infrastructure with the establishment of the research station covering 10400 ha, of the *Centre d'embouche de Faragouaran*, Centres for oxen-training, and the Centre for Sheep of Diéguénina, the construction of feeder roads, (2) the establishment of a breeding nucleus herd and the dissemination of improved stock, (3) improved management systems for grazing areas with the delimitation of recognised 'village pastoral zones', the construction of wells and dams, the introduction of 'controlled early fires' and (3) the development of villages associations institutional capacity.

The 4th phase of the programme is being funded by the *Banque Ouest Africaine de Développement* (BOAD) with the objective of (1) increasing the productivity and quality of N'Dama cattle both for local and export markets in the sub-region so as to enhance income and livelihood of livestock keepers. Specific objectives include:

(1) Improvement of the village N'Dama cattle husbandry system,
(2) Introduction of 3,168 N'Dama heifers into villages
(3) Production of animals for the market
(4) Fattening animals for sale

During this phase farmers have access to a 5-year credit scheme to purchase N'Dama heifers. Veterinary services are contracted with private veterinarians who provide prophylactic as well as curative treatments. In

addition to the credit scheme, the project will also invest in infrastructure development. Night kraals, mini-dams, feeder roads, firebreaks and training centres will be established. Extension and training of farmers delivered by the Madina Diassa research station is a key component of the scheme.

b. Contrôle Intégré de la Trypanosomose Animale à travers la Création de Zones Exemptes de Mouche Tsetse

The Government of Mali signed an agreement with the Government of Burkina Faso and the International Atomic Energy Agency (IAEA) in 2001, to carry out eradication of *G. palpalis* from selected areas using the Sterile Insect Technique (SIT). The current programme aims at eradicating tsetse from the Niger delta area of Bamako district. This project will be implemented during the next 4 years following suppression of the tsetse population by means of insecticide impregnated screens and traps and final eradication using sterile tsetse bred in a colony at CIRDES in Burkina Faso. The Bamako delta region has been selected, as it is an area in which crossbred dairy cattle are produced by artificial insemination to meet the demand for dairy products in the highly populated Bamako District. Future long-term plans are to eradicate tsetse from the cotton zones of both Mali and Burkina Faso.

In 1992 there was an FAO project to carry out research on attractants to be used with insecticide-impregnated devices (traps/screens). This trial was carried out in Tienfala, Baguineda districts with a project aimed at suppressing tsetse populations over 500 km^2. In 1995 a programme using pour-on treated cattle over an area of 2670km^2 was undertaken in the Sikasso region.

Key Baseline Projects Related to In-Situ Conservation of Endemic Ruminant Livestock in Senegal

a. Projet Systèmes de production intégrés pour la protection des ressources en Moyenne Casamance (PPSPI). The project objectives are to control the degradation of natural resources in Moyenne Casamance through the establishment of structures (target groups, farmers organisations, public services, NGOs) that can promote the conservation of natural resources based on the application integrated agro-sylvo-pastoral production systems. Their domain of intervention includes aforestation, improved ovens/cookers, beekeeping, dams, composting, stabling, planting of *Cajanus cajan*, rice production etc.

b. Projet d'Appui à l'Entreprenariat Forestier dans la région de Kolda **(PARFKS).** The objective of this project is to promote economic growth in the Kolda region through better use and development of forest-based commodities.

c. Projet de Gestion Durable et Participative des Energies Traditionnelles et de Substitution **(PROGEDE).** Tambacounda and Kolda. Its objective is to contribute to the sustainable supply of energy for home use. Its activities include better management of 30,000 ha of natural forests and of the parties involved in charcoal production and marketing; support to private initiatives for the development and use of alternative energy sources; the strengthening of institutions involved in the planning of this sector and the promotion of public and private participation in the energy sector. This project has already achieved the production of aerial photographs of 10,000 ha; training of local communities; creation of firebreaks, and a programme for the management of biodiversity at the margins of National Forest and Game Park of Niokolo Koba.

Section 3 – Country Specific Acronyms

Acronyms Related to Gambia Baseline

PDF	–	Project Development Facility
NSC	–	National Steering Committee
RSC	-	Regional Steering Committee
AnGR	–	Animal Genetic Resources
GDP	–	Gross Domestic Product
NEMA	–	National Environmental Management Act
AEZ	–	Agro-Ecological Zone
MRC	–	Medical Research Council
ITC	–	International Trypanotolerance Centre
KWNP	–	Kiang West National Park
MT	–	Metric Tons
MFRMP	–	Mixed Farming Resource Management Project
USAID	–	United States Agency for International Development
UNDP	–	United Nations Development Programme
PARC	–	Pan African Renderpest Campaign
GAMVET	–	The Gambia Veterinary Company
IRDPL	–	Integrated Rural Development Programme for Livestock
PROCORDEL	–	Research and Development project for livestock farming in West Africa
TCP	–	Technical Cooperation Programme
RFCIP	–	Rural Finance and Community Initiative Project
VISACAS	–	Village Savings and Credit Associations
ADB	-	African Development Bank
NAP	–	National Action Programme to combat Desertification
NBSAP	–	National Biodiversity Strategy and Action Plan
LADEP	–	Lowlands Agricultural Development Programme
DLS	–	Department of Livestock Services
GEAP	–	The Gambia Environmental Action Plan
NEAPs	–	National Environmental Action Plans
LMB	–	Livestock Marketing Board

Acronyms related to Guinea Baseline

DNE	= Direction Nationale de l'Elevage
LPDE	= Lettre de Politique de Développement de l'Elevage
LPDA	= Lettre de Politique de Développement Agricole
FIDA	= Fonds International de Développement Agricole
BAD	= Banque Africaine de Développement
BID	= Banque Internationale de Développement
OPEP	= Organisation des Pays Producteurs de Pétrole
PNUD	= Programme des Nations Unis pour le Développement
FENU	= Fonds des Nations Unis pour l'Equipement
CEDEAO	= Communauté Economique des Etats d'Afrique de l'Ouest ;
USAID	= Agence des américaine pour le développement
KFW	= Agence de coopération allemande
AFD	= Agence française de Développement
CAE	= Centre d'appui à l'élevage
PAK	= Projet Agricole de Kolenté ;

PCK = Projet Coton de Kankan
TRH = Projet pilote d'aménagement de la transhumance
PA/PDR-MG = Programme d'appui au projet de développement rural de la M. Guinée
PRODABEK = PROjet de Développement Agricole Béyla-Kérouané
PNSA = Projet National des Services Agricoles
CCPBN = P. Centre communautaire de production de géniteurs N'dama de Famoïla
PARC = Programme Panafricain de Lutte contre la Peste bovine
PDR /MY = Projet de Développement Rural Mali-Yambering;
PDRI/ FD = Projet de Développement Rural Intégré du Fouta Djallon
PRAADEL = Progr. Réhabilitation Agricole et d'Appui au Développement Local (F Djallon)
PAPE-BGN = Projet d'Appui aux Petits Exploitants en Basse Guinée Nord
PDRI/Dubréka = Projet de Développement Rural Intégré de Dubréka
PGRR = Projet de Gestion des Ressources Rurales
PPDR/HG = Programme Participatif de Développement Rural en Haute Guinée
PADER/HG =Programme d'Appui au Développement Rural en Haute Guinée
PAE = Projet d'Appui à l'Elevage
PEGRN = Programme Elargi de Gestion des Ressources Naturelles
PASEL = Projet d'Appui au Secteur de l'Elevage
PLTA = Projet de Lutte contre la Trypanosomiase Animale
PROCORDEL = Programme Coordonné de Recherche Développement en Elevage
AGIR = Appui pour la Gestion Intégrée des Ressources
RGTA = Réseau Guinéen pour la Traction Animale
PACV = Programme d'Appui aux Communautés Villageoises
ONG = Organisation Non Gouvernementale
PRODAD = Projet d'Appui au Développement Durable en Guinée Forestière
PDR/Télimélé = Projet de Développement Rural Intégré de Télimélé
PDPEF = Projet de Développement des Petits Exploitants de la Guinée Forestière
PAFPA = Projet d'Appui aux Filières de Productions Animales
PAE/MG = Projet d'Appui à l'Elevage Volet Moyenne Guinée
PAE/GF = Projet d'Appui à l'Elevage Volet GUIN2E Forestière
PARN = Programme d'Amélioration de la Race N'dama
SNPRV = Service National de Promotion Rurale et de Vulgarisation
IRAG = Institut de Recherche Agronomique de Guinée
CRD = Communauté Rurale de Développement
OP = Organisation des Producteurs
VSF = Vétérinaires Sans Frontières
AFVP = Association Française des Volontaires du Progrès
EUPD = Entraide universitaire pour le développement
CENAFOD = Centre National de formation au développement
CFEL = Centre de Formation à l'Elevage de Labé
PPCB = Péripneumonie Contagieuse bovine
LCVD = Laboratoire Central vétérinaire de diagnostic

Acronyms Related to Mali Baseline

APROFA : Agence pour la Promotion des filières Agricoles
ANICT : Agence Nationale d'Investissement des Collectivités Territoriales
AV : Association Villageoise
BNDA: Banque Nationale pour le Développement Agricole
CTAP : Cellule Technique d'Appui à la Privatisation
CMDT : Compagnie Malienne pour le Développement des Fibres Textiles

CPS :	Cellule de Planification et de la Statistique
DNAMR :	Direction Nationale de l'Appui au Monde Rural
DNCN :	Direction Nationale de la Conservation de la Nature
GRN :	Gestion des Ressources Naturelles
IER :	Institut d'Economie Rurale
LCV :	Laboratoire Central Vétérinaire
ONDY :	Opération Ndama Yanfolila
OMBEVI :	Office Malien du Bétail et de la Viande
ONG :	Organisation Non Gouvernementale
PASA :	Programme d'Ajustement du Secteur Agricole
PASAOP :	Programme d'Appui aux Services Agricoles et aux Organisations Paysannes
PARS :	Programme d'Action Régionale de Sikasso
PNIR :	Programme national d'infrastructures rurales
PDRIK :	Projet de développement rural Intégré de Kita

Acronyms Related to Senegal Baseline

AGROPROV	Association des Groupements de Producteur d'Ovins
ANCAR	**Agence Nationale du Conseil Agricole et Rural**
ASP	Association Sud Pakao
CLCOP	**Comité local de Concertation des Organisations Paysannes**
CNCAS	**Caisse Nationale de Crédit Agricole**
CREME	Crédit Mutuel de l'Elevage
CSE	Centre de suivi Ecologique
DERBAC	**Projet de Développement Rural de la Moyenne Casamance**
DIREL	**Direction de l'Elevage**
DPN	**Direction des Parcs Nationaux**
FDL	**Fonds de Développement Local**
FEM	**Fonds pour l'Environnement Mondial**
FIDEL	Fonds Interprofessionnel de Développement de l'Elevage
ISRA	**Institut Sénégalais des Recherches Agricoles**
LPDA	Lettre de Politique de Développement Agricole
MDE	**Maison des Eleveurs**
MS	**Matière sèche**
PAARZ	Projet d'Appui à l'Auto-promotion de la Région de Ziguinchor
PAPEL	Projet d'Appui à l'Elevage
PACE	**Programme pan-africain pour le contrôle des Epizooties**
PAFS	Plan d'Actions Forestier du Sénégal
PARC	Projet Campagne Panafricaine de Lutte contre la Peste Bovine
PISA	Programme d'Investissement du Secteur Agricole
PASA	Programme d'Ajustement du Secteur Agricole

PGCRN	**Projet de Gestion Communautaire des Ressources Naturelles**
PPFS	**Projet de Protection des Forêts du Sud**
PLCP	**Programme de Lutte contre la pauvreté**
PM/FEM	Programme de Micro Financement FEM
PMIA	**Projet de Modernisation et d'Intensification Agricole**
PNAE	Plan National d'Actions pour l'Environnement
PLANOP	Plan d'opération
PSIDL	**Projet de soutien aux Initiatives de Développement Local**
PRODAM	Projet de Développement Agricole dans le Département de Matam
PRODEC	Projet de Développement des Espèces à Cycle Court
SIFEL	Système Interprofessionnel de Financement de l'Elevage
PROMER	**Projet de Promotion de la MicroEntreprise Rurale**
PSAOP	**Programme d'Appui aux Services Agricoles et Organisations de Producteurs**
RGA	Ressources génétiques animales
SODAGRI	Société de Développement Agricole
SODEFITEX	Société de Développement des Fibres Textiles
UBT	Unité Bétail Tropical

ANNEX 2N: Co-Financing Letters of Commitment

See attached file for signed letters

Annex 2O: Project Output Budget

	TOTAL	GEF	AfDB	ILRI	ITC	Govts.
Outcome 1: Production and productivity of endemic ruminant livestock is sustainably improved	**$ 9,750,000**	**$ 3,800,000**	**$ 2,540,000**	**$ 280,000**	**$ 1,000,000**	**$ 2,130,000**
Output 1.1: Characterize endemic ruminant livestock and their productive environment/system	**$ 1,250,000**	**$ 590,000**	**$ 560,000**	**$ 100,000**	**$ -**	**$ -**
1.1.1 Rapid rural appraisal and inventory of livestock management practices and genotypes at each of twelve project pilot sites	$ 80,000	$ 80,000	$ -	$ -	$ -	$ -
1.1.2 Identification, classification and inventory of the genetic structure of each breed (population size and distribution, molecular genetic structure), as well as identification of correlative genetic traits of economic and global biodiversity importance. Work will include sampling and breed surveys, laboratory analysis (50 animals of each species at each of 3 sites in each country; 15 genetic markers), and development of regional distribution maps for both genetically pure and mixed populations	$ 370,000	$ 320,000	$ -	$ 50,000	$ -	$ -
1.1.3 Collect and collate existing information on phenotypes, including local/traditional knowledge, into a database, and conduct targeted surveys to map the phenotype structure of each breed (using existing institutional instruments)	$ 200,000	$ 190,000	$ -	$ 10,000	$ -	$ -
1.1.4 Training, updating and reinforcing capacity of national research institutions to carry out research on endemic ruminant livestock and their environment	$ 600,000	$ -	$ 560,000	$ 40,000	$ -	$ -
Output 1.2: Improve management systems for livestock production and productivity (animal health, nutrition, housing, etc.)	**$ 1,100,000**	**$ 1,030,000**	**$ -**	**$ 50,000**	**$ -**	**$ 20,000**
1.2.1 Identify opportunities for improvement (from outputs of 1.1), built upon existing experiences and structures	$ 50,000	$ -	$ -	$ 50,000	$ -	$ -
1.2.2 Test "Best-bet" options through participatory research (linked to improved market development) in collaboration with existing endemic livestock producers' associations	$ 800,000	$ 800,000	$ -	$ -	$ -	$ -
1.2.3 Train endemic livestock producers at pilot sites to apply improved management techniques	$ 160,000	$ 160,000	$ -	$ -	$ -	$ -
1.2.4 Assure regular exchange among project sites at country and sub-regional level on results and lessons learned	$ 90,000	$ 70,000	$ -	$ -	$ -	$ 20,000
Output 1.3: Establish genetic improvement systems for endemic ruminant livestock	**$ 6,450,000**	**$ 1,630,000**	**$ 1,700,000**	**$ 100,000**	**$ 1,000,000**	**$ 2,020,000**
1.3.1 Improve productivity of purebred endemic ruminant livestock through establishment of community/association managed dispersed nucleus breeding herds (built upon existing experiences and structures)	$ 3,000,000	$ 1,500,000	$ 400,000	$ 100,000	$ -	$ 1,000,000
1.3.2 Improve productivity of purebred endemic ruminant livestock through participatory selective breeding at already existing field research stations	$ 3,140,000	$ -	$ 1,200,000	$ -	$ 1,000,000	$ 940,000

1.3.3 Implement measures to manage and control cross-breeding between endemic ruminant livestock and other species (e.g. training and awareness building among farmers and decision-makers)	$ 260,000	$ 80,000	$ 100,000	$ -	$ -	$ 80,000
1.3.4 Strengthen links with existing endemic livestock selection programmes within the sub-region	$ 50,000	$ 50,000	$ -	$ -	$ -	$ -
Output 1.4: Establish systems for dissemination of information on management practices and genetic/breeding systems to farmers, extension workers, and others (in coordination with Output 2.3)	**$ 160,000**	**$ 130,000**	**$ -**	**$ -**	**$ -**	**$ 30,000**
1.4.1 Identify partners for development and participation in self-supporting, participatory management and breeding information sharing systems	$ 20,000	$ 20,000	$ -	$ -	$ -	$ -
1.4.2 Work with partners to analyze existing information flows and to establish/strengthen information sharing systems (databases, analytical systems, dissemination systems) at the national and sub-regional levels (using results of activities 1.2.2, 1.3.1, and 1.4.1)	$ 40,000	$ 40,000	$ -	$ -	$ -	$ -
1.4.3 Use information systems to understand management and breeding systems dynamics and trends, perform needs assessments, and identify impact indicators	$ 40,000	$ 40,000	$ -	$ -	$ -	$ -
1.4.4. Develop mechanisms to disseminate critical management and breeding information to relevant stakeholders at local, national and sub-regional level	$ 40,000	$ 20,000	$ -	$ -	$ -	$ 20,000
1.4.5 Monitor the performance of new/strengthened information systems through consultation with participants/end-users	$ 20,000	$ 10,000	$ -	$ -	$ -	$ 10,000
Output 1.5: Identify, demonstrate and disseminate information on incentive systems for farmer participation in endemic livestock raising	**$ 430,000**	**$ 420,000**	**$ -**	**$ 10,000**	**$ -**	**$ -**
1.5.1 Conduct opportunity/constraint analysis of existing and potential incentive systems and economic values of endemic ruminant livestock (Activity 2.1.1), including cost-benefit analyses comparing endemic and exotic livestock raising under varied policy frameworks and in various socio-economic and ecological conditions, with participation of local endemic livestock producers	$ 40,000	$ 30,000	$ -	$ 10,000	$ -	$ -
1.5.2 Demonstrate applicability of project activities to strengthen economic incentives for raising endemic ruminant livestock, including: accurate assessments of the economic value of endemic livestock raising (Output 4.2); improved management and productivity of endemic livestock raising (e.g. Outputs 1.2, 1.3); improved access to markets for dairy and meat products (e.g. Output 2.2), development of new markets for livestock products (e.g. Output 2.1), and increased access to credit from local investment funds to increase productivity (e.g. Output 2.6)	$ 200,000	$ 200,000	$ -	$ -	$ -	$ -
1.5.3 Demonstrate applicability of project activities to strengthen social incentives for raising endemic ruminant livestock, including raising status/social capital of owners through certification, fairs and competitions (e.g. Output 2.2)	$ 40,000	$ 40,000	$ -	$ -	$ -	$ -
1.5.4 Develop security incentives for raising endemic ruminant livestock, through establishment of secure animal identification systems (alpha-numeric tattoos), based on existing programs in Guinea and Senegal	$ 80,000	$ 80,000	$ -	$ -	$ -	$ -

1.5.5 Assess effectiveness, equitability, and socio-economic impacts of demonstration incentive systems, and replicate lessons learned within the sub-region	$ 70,000	$ 70,000	$ -	$ -	$ -	$ -
Output 1.6 Strengthen capacity for participatory community management of livestock production	**$ 360,000**	**$ -**	**$ 280,000**	**$ 20,000**	**$ -**	**$ 60,000**
1.6.1 Identify, strengthen and/or reorient existing village-level endemic livestock producers' associations to promote, manage and selectively breed endemic ruminant livestock herds	$ 200,000	$ -	$ 180,000	$ 20,000	$ -	$ -
1.6.2 Work with existing programs in the sub-region (e.g. PACE/CAPE) to train and equip veterinary assistants in local communities in project pilot zones	$ 80,000	$ -	$ 40,000	$ -	$ -	$ 40,000
1.6.3 Work with existing programs and organizations at the local level to facilitate the increased participation of women's groups in livestock management activities (with focus on milk production, integrated agriculture-livestock manure programs, raising of small ruminants)	$ 80,000	$ -	$ 60,000	$ -	$ -	$ 20,000
Outcome 2: Commercialization and marketing systems of endemic ruminant livestock and livestock products are strengthened	**$ 2,553,000**	**$ -**	**$ 2,053,000**	**$ 210,000**	**$ -**	**$ 290,000**
Output 2.1: Identify marketing opportunities, including niche markets for livestock, livestock products, and breeding material, in cooperation with endemic livestock producers	**$ 400,000**	**$ -**	**$ 290,000**	**$ 110,000**	**$ -**	**$ -**
2.1.1 Conduct economic analysis of endemic ruminant livestock raising (breeds, traits, functions, services) to strengthen capacities of local, national regional actors to engage in market analysis and relevant information exchange.	$ 100,000	$ -	$ 80,000	$ 20,000	$ -	$ -
2.1.2 Analysis of market structures and channels	$ 200,000	$ -	$ 170,000	$ 30,000	$ -	$ -
2.1.3 Identify market opportunities for endemic livestock and livestock products locally, regionally, and globally, including development of new markets for livestock products (e.g. crafts made from hides and horns)	$ 50,000	$ -	$ 20,000	$ 30,000	$ -	$ -
2.1.4 Identify market constraints for endemic livestock and livestock products, and identify market threats	$ 50,000	$ -	$ 20,000	$ 30,000	$ -	$ -
Output 2.2: Develop marketing, distribution and processing infrastructure for endemic ruminant livestock and livestock products	**$ 908,000**	**$ -**	**$ 768,000**	**$ -**	**$ -**	**$ 140,000**
2.2.1 Identify partners for infrastructure design and development	$ 12,000	$ -	$ 12,000	$ -	$ -	$ -
2.2.2 Conduct needs analysis on infrastructure and processes	$ 60,000	$ -	$ 60,000	$ -	$ -	$ -
2.2.3 Support infrastructure establishment (market outlets, transportation, slaughterhouses, milk processing units) at national and sub-regional level	$ 556,000	$ -	$ 456,000	$ -	$ -	$ 100,000
2.2.4 Implement activities to address market constraints for endemic livestock (see activity 2.1.4)	$ 60,000	$ -	$ 40,000	$ -	$ -	$ 20,000
2.2.5 Support strengthening of existing systems for control of livestock related diseases resulting from market activities, with public, private, and collective mechanisms/partners	$ 120,000	$ -	$ 100,000	$ -	$ -	$ 20,000

2.2.6 Organize endemic livestock fairs at contests at the project pilot zone and national levels	$ 100,000	$ -	$ 100,000	$ -	$ -	$ -
Output 2.3: Implement a knowledge-management decision support system for market information (coordinated with Output 1.4)	**$ 385,000**	**$ -**	**$ 275,000**	**$ 80,000**	**$ -**	**$ 30,000**
2.3.1 Identify partners for development and participation in market information sharing system	$ 15,000	$ -	$ 10,000	$ 5,000	$ -	$ -
2.3.2 Work with partners to analyze existing information flows and to establish/strengthen information sharing systems (databases, analytical systems, dissemination systems) at the national and sub-regional levels	$ 140,000	$ -	$ 130,000	$ 10,000	$ -	$ -
2.3.3 Use information systems to understand market systems dynamics and trends, perform needs assessment, and identify impact indicators	$ 60,000	$ -	$ 60,000	$ -	$ -	$ -
2.3.4. Develop and implement mechanisms to disseminate critical market information (e.g. Output 2.1) to relevant stakeholders at local, national and sub-regional level	$ 120,000	$ -	$ 55,000	$ 45,000	$ -	$ 20,000
2.3.5 Monitor the performance of new/strengthened information systems through consultation with participants/end-users	$ 50,000	$ -	$ 20,000	$ 20,000		$ 10,000
Output 2.4: Identify, develop and support community-based livestock marketing associations	**$ 400,000**	**$ -**	**$ 280,000**	**$ 20,000**	**$ -**	**$ 100,000**
2.4.1 Identify and analyse existing marketing associations with regard to their potential and constraints as project partners	$ 60,000	$ -	$ 50,000	$ 10,000	$ -	$ -
2.4.2 Catalyze where required the formation of new marketing associations	$ 60,000	$ -	$ 60,000	$ -	$ -	$ -
2.4.3 Link with other activities of the project, and with other partner/support institutions, to strengthen existing and new associations through training, credit, networking, promotional activity, and technical support	$ 280,000	$ -	$ 170,000	$ 10,000	$ -	$ 100,000
Output 2.5: Development of credit schemes for endemic ruminant livestock producers and traders	**$ 460,000**	**$ -**	**$ 440,000**	**$ -**	**$ -**	**$ 20,000**
2.5.1 Assess current priorities for access to credit (e.g. inputs for productivity increases) and current constraints on access to credit (e.g. unsuitability of short-term credit for livestock production)	$ 40,000	$ -	$ 40,000	$ -	$ -	$ -
2.5.2 Analyse previous and existing credit schemes within the sub-region (in partnership with potential beneficiaries and partners)	$ 40,000	$ -	$ 40,000	$ -	$ -	$ -
2.5.3 Select existing credit partners (public and private) and develop and test credit schemes at project pilot sites and priority market points	$ 200,000	$ -	$ 200,000	$ -	$ -	$ -
2.5.4 Provide technical support (management, processing) to farmers' associations, market participants, and other credit recipients to enable their participation (with an emphasis on women's participation)	$ 180,000	$ -	$ 160,000	$ -	$ -	$ 20,000

Outcome 3: Natural resources in project pilot sites conserved and sustainably managed for the benefit of endemic ruminant livestock, ecosystem services, and human livelihoods	**$13,268,000**	**$ 3,958,000**	**$ 8,810,000**	**$ 140,000**	**$ -**	**$ 360,000**
Output 3.1: Establish systems of measurement and assessment of natural resource use	**$ 472,000**	**$ 412,000**	**$ -**	**$ 20,000**	**$ -**	**$ 40,000**
3.1.1 Determine critical natural resource indicators with input from local communities (for use in baseline and comparative analysis and as inputs into management plans)	$ 92,000	$ 52,000	$ -	$ 20,000	$ -	$ 20,000
3.1.2 Determine project pilot site boundaries, identify and classify ecosystem types, and assess basic socio-economic and natural resource baseline information at each project pilot site (in collaboration with local inhabitants, and building on work carried out during the PDF-B process)	$ 220,000	$ 200,000	$ -	$ -	$ -	$ 20,000
3.1.3 Analyze existing natural resource use patterns and techniques, and recent and ongoing trends in landscape change, particularly those related to endemic livestock (including ecosystem carrying capacities; measurements of change in ecosystem services; and impacts on livelihoods due to landscape/habitat change)	$ 100,000	$ 100,000	$ -	$ -	$ -	$ -
3.1.4 Collect and analyze quantitative and qualitative data on migration/transhumance patterns and trends	$60,000	$60,000	$ -	$ -	$ -	$ -
Output 3.2: Strengthen capacity of local inhabitants to develop strategies to conserve and manage livestock habitat	**$ 138,000**	**$ 118,000**	**$ -**	**$ 10,000**	**$ -**	**$ 10,000**
3.2.1 Strengthen analytical, organizational and management skills for sustainable agro-sylvo-pastoral management and endemic livestock conservation among livestock herders, farmers, extension agents	$ 48,000	$ 48,000	$ -	$ -	$ -	$ -
3.2.2 Training and support of local resource users (livestock herders, farmers) in decision making processes and negotiation of agreements with local authorities	$ 90,000	$ 70,000	$ -	$ 10,000	$ -	$ 10,000
Output 3.3: Develop and implement project site-level landscape management planning processes and institutional structures	**$ 418,000**	**$ 348,000**	**$ -**	**$ 20,000**	**$ -**	**$ 50,000**
3.3.1 Assess existing development and management practices and policies, and with the participation of local communities, harmonize existing local practices and policies based on sustainable resource management	$ 58,000	$ 28,000	$ -	$ 20,000	$ -	$ 10,000
3.3.2 Provide training to community-based resource (agricultural, pastoral, forest) management structures and conservation institutions/associations	$ 220,000	$ 200,000	$ -	$ -	$ -	$ 20,000
3.3.3 Develop and implement community wide resource management frameworks at each project pilot site, including conflict management mechanisms (to implement and oversee actions under Output 3.4)	$ 140,000	$ 120,000	$ -	$ -	$ -	$ 20,000
Output 3.4: Establish locally adapted and supported norms and regulations for the sustainable management of habitat and resources important for livestock production and ecosystem services	**$11,680,000**	**$ 3,080,000**	**$ 8,360,000**	**$ -**	**$ -**	**$ 240,000**

3.4.1 Analyze existing communal grazing norms and strengthen and/or develop improved norms for the management of endemic ruminant livestock (e.g. create no-grazing areas to protect critical native habitat; establish grazing areas for endemic ruminant livestock only; establish grazing rotations and other sustainable grazing practices)	$ 730,000	$ 330,000	$ 360,000	$ -	$ -	$ 40,000
3.4.2 Improve management of forest resources (e.g. promote strategies to decrease deforestation through energy saving/substituting devices, alternative fuel sources, and increased wood supply and/or agroforestry production; develop and implement locally adapted regulations on communal use of forest resources, in particular fuelwood use; educate local inhabitants on methods to avoid/minimize bush fires and create operational alert systems for bush fires)	$ 3,790,000	$ 2,750,000	$ 1,000,000	$ -	$ -	$ 40,000
3.4.3 Improve management of forage resources (pasture enrichment for increased biodiversity; improve feed storage infrastructure; educate herders to increase forage collection during rainy season; test improved feed varieties and/or forage additives and disseminate best results to endemic livestock producers, using credit made available through Output 2.6)	$ 1,240,000	$ -	$ 1,200,000	$ -	$ -	$ 40,000
3.4.4 Improve management of hydrologic resources (e.g. repair and maintain water storage and distribution infrastructure, including the creation of temporary watering points)	$ 4,040,000	$ -	$ 4,000,000	$ -	$ -	$ 40,000
3.4.5 Improve management of soil resources (formalize manure contracts; disseminate techniques for efficient manure use)	$ 640,000	$ -	$ 600,000	$ -	$ -	$ 40,000
3.4.6 Improve management of agricultural lands (promote the use of certified/improved seed for agricultural crops, so as to increase agricultural productivity and lessen the need to expand areas under cultivation; establish and implement controls on the expansion of cultivated lands into critical indigenous habitats)	$ 1,240,000	$ -	$ 1,200,000	$ -	$ -	$ 40,000
Output 3.5: Develop and test production systems which combine endemic ruminant livestock raising with compatible natural resource uses and/or agricultural production at project pilot sites	**$ 560,000**	**$ -**	**$ 450,000**	**$ 90,000**	**$ -**	**$ 20,000**
3.5.1 Assess compatibility of existing natural resource use strategies (see 3.1.3) at project pilot sites with endemic ruminant livestock production	$ 60,000	$ -	$ 60,000	$ -	$ -	$ -
3.5.2 Develop and test combined economic production systems (livestock and agriculture; livestock and forest products) at project pilot sites	$ 400,000	$ -	$ 310,000	$ 90,000	$ -	$ -
3.5.3 Support local communities in the promotion of markets and local consumption of agroforestry and other sustainable forest products	$ 100,000	$ -	$ 80,000	$ -	$ -	$ 20,000
Outcome 4: Legal, policy and institutional frameworks established at the local, national, and sub-regional level for in-situ conservation of endemic ruminant livestock	**$ 1,502,000**	**$ 857,000**	**$ 200,000**	**$ 325,000**	**$ -**	**$ 120,000**
Output 4.1: Harmonize national and sub-regional policies and laws for conservation, promotion, trade, and management (including land tenure) of endemic ruminant livestock and livestock products	**$ 378,000**	**$ 198,000**	**$ -**	**$ 100,000**	**$ -**	**$ 80,000**

4.1.1 Participatory review of existing policies and laws, including stakeholder analysis (relevant interest groups), policy analysis (costs and benefits of existing policies), and identification of policy opportunities and constraints, building on outputs of PDF-B process	$ 58,000	$ 38,000	$ -	$ 10,000	$ -	$ 10,000
4.1.2 Elaborate, revise, test and evaluate policies and laws, at project pilot zone level and national level	$ 70,000	$ 30,000	$ -	$ 30,000	$ -	$ 10,000
4.1.3 Develop regulations and enforcement mechanisms to support revised policy and legal framework	$ 80,000	$ 40,000	$ -	$ 20,000	$ -	$ 20,000
4.1.4 Translate and publish revised policies, laws, and regulations into languages spoken at project pilot zones, and disseminate to local populations	$ 50,000	$ 30,000	$ -	$ -	$ -	$ 20,000
4.1.5 Ongoing participatory review and fine-tuning of policy, legislative, and regulatory changes, and institutional analysis of local stakeholders, at project pilot site, national, and sub-regional levels	$ 120,000	$ 60,000	$ -	$ 40,000	$ -	$ 20,000
Output 4.2: Develop and/or strengthen national and sub-regional policies and incentives in support of sustainable resource management related to endemic ruminant livestock	**$ 380,000**	**$ 315,000**	**$ -**	**$ 65,000**	**$ -**	**$ -**
4.2.1 Develop policy/economic decision support tool at sub-regional level to study existing and potential subsidies, incentives/disincentives, and other financial mechanisms related to livestock raising and natural resource management at the project pilot sites	$ 60,000	$ 40,000	$ -	$ 20,000	$ -	$ -
4.2.2 Demonstrate fair valuation of natural ecosystem services and support its use in the decisions of national economic policymakers and local resource users through education and collaboration	$ 120,000	$ 120,000	$ -	$ -	$ -	$ -
4.2.3 Identification of incentive options following demonstration of the economic value of endemic livestock raising; support awareness raising and policy dialogue on incentives at community and national levels; contribute to policy reform in support of appropriate incentives; and implementation and evaluation of incentive options	$ 200,000	$ 155,000	$ -	$ 45,000	$ -	$ -
Output 4.3: Strengthen local capacity to participate in the creation and the application of policies, laws, and regulations for the management of endemic ruminant livestock and their habitat	**$ 220,000**	**$ 100,000**	**$ -**	**$ 120,000**	**$ -**	**$ -**
4.3.1 Conduct local stakeholder analysis and engage relevant interest groups/stakeholders (based on outputs of Activity 4.1.1)	$ 50,000	$ 30,000	$ -	$ 20,000	$ -	$ -
4.3.2 Test/evaluate/adapt mechanisms for developing and implementing actions at the local level (including sustainability)	$ 120,000	$ 70,000	$ -	$ 50,000	$ -	$ -
4.3.3 Develop mechanisms for replicating local-level decision-making processes at other rural communities	$ 50,000	$ -	$ -	$ 50,000	$ -	$ -
Output 4.4: Develop mechanisms for supporting local decisions and actions	**$ 524,000**	**$ 244,000**	**200,000**	**$ 40,000**	**$ -**	**$ 40,000**
4.4.1 Perform function analysis for professional associations, grassroots organizations, and other stakeholders	$ 24,000	$ 14,000	$ -	$ 10,000	$ -	$ -
4.4.2 Strengthen capacity of existing national research and extension centers to provide long-term assistance to associations, organizations, and individual farmers and herders in promoting in-situ conservation of endemic ruminant livestock	$ 430,000	$ 200,000	$ 200,000	$ -	$ -	$ 30,000

4.4.3 Test, evaluate and fine-tune best-bet technical services and information delivery systems	$ 70,000	$ 30,000	$ -	$ 30,000	$ -	$ 10,000
Outcome 5: A sub-regional system is established for cooperation, information exchange, and coordinated support for the conservation of endemic livestock	**$ 2,520,000**	**$ 1,385,000**	**$ 520,000**	**$ 115,000**	**$ -**	**$ 500,000**
Output 5.1: Develop mechanisms for information sharing and lessons learning among project participants, and for adaptive management based on lessons learned during project implementation	**$ 1,080,000**	**$ 975,000**	**$ -**	**$ 65,000**	**$ -**	**$ 40,000**
5.1.1 Conduct bi-annual national-level joint learning workshops for project staff, local partners from each site, and key stakeholders to share lessons learned and strategies for improvement	$ 450,000	$ 450,000	$ -	$ -	$ -	$ -
5.1.2 Conduct bi-annual sub-regional level joint learning workshops, with two representatives from each national level meeting, as well as regional stakeholders and experts, to review national level workshop outputs, incorporate their recommendations into project planning, and provide synthesized recommendations for dissemination back to national and local partners	$ 340,000	$ 325,000	$ -	$ 15,000	$ -	$ -
5.1.3 Disseminate outputs of national and sub-regional workshops to all stakeholders to enhance capacity building efforts and institutional sustainability, to provide practical lessons learned to the scientific and development communities, and to support awareness building on conservation of endemic livestock	$ 40,000	$ -	$ -	$ -	$ -	$ 40,000
5.1.4 Establish information sharing mechanisms to exchange lessons learned and best practices with UNEP-GEF project "Development and application of decision-support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives"	$ 200,000	$ 150,000	$ -	$ 50,000	$ -	$ -
5.1.5 Organize and disseminate information gathered from the project (lessons learned) into databases and other print and electronic media; use information to support adaptive management as part of the project implementation; and identify “champions” for mainstreaming lessons learned into relevant national and international processes	$ 50,000	$ 50,000	$ -	$ -	$ -	$ -
Output 5.2: Establish and operationalize long-term sub-regional networks for information exchange	**$ 140,000**	**$ -**	**$ 140,000**	**$ -**	**$ -**	**$ -**
5.2.1 Establish a sub-regional information-sharing network on endemic ruminant livestock management issues, including producers, breeders, marketers and distributors of endemic ruminant livestock, as well as local, national and regional agencies, research institutions, and conservation groups	$ 100,000	$ -	$ 100,000	$ -	$ -	$ -
5.2.2 Support the development of direct information sharing (electronic networks; databases) among livestock breeders associations, and between them and regional institutions and associations	$ 40,000	$ -	$ 40,000	$ -	$ -	$ -
Output 5.3: Formalize mechanisms and agreements for coordination among institutions and associations in the sub-region involved in the management of endemic ruminant livestock	**$ 190,000**	**$ 60,000**	**$ 110,000**	**$ -**	**$ -**	**$ 20,000**
5.3.1 Conduct studies on existing and potential cooperation and partnership options	$ 20,000	$ -	$ 20,000	$ -	$ -	$ -
5.3.2 Grant formal recognition and legal status to professional organizations of endemic livestock breeders and operators	$ 20,000	$ -	$ -	$ -	$ -	$ 20,000

5.3.3 Carry out consultations & collaboration within the sub-region to identify and agree upon critical priorities for management of endemic livestock and habitats	$ 60,000	$ 20,000	$ 40,000	$ -	$ -	$ -
5.3.4 Formally establish and operationalize a network of all institutions and associations in the sub-region involved in the management of endemic livestock	$ 45,000	$ 20,000	$ 25,000	$ -	$ -	$ -
5.3.5 Facilitate bilateral and multilateral management agreements and cooperative projects among network members	$ 45,000	$ 20,000	$ 25,000	$ -	$ -	$ -
Output 5.4: Enable replication of selected site level activities (awareness raising/education and lessons learned) from twelve primary project pilot sites to eight secondary project pilot sites	**$ 620,000**	**$ 280,000**	**$ -**	**$ -**	**$ -**	**$ 340,000**
5.4.1 Provide public education and awareness raising on project goals, strategies, and ongoing successes for key stakeholders at secondary sites	$ 80,000	$ 80,000	$ -	$ -	$ -	$ -
5.4.2 Carry out assessment of successful site level strategies and best practices at primary project sites, and determine key lessons learned through participatory review by project management structures	$ 200,000	$ 200,000	$ -	$ -	$ -	$ -
5.4.3 Conduct outreach and coordination activities with government agencies, international institutions/donors, and other managers of existing sustainable development programs and projects at secondary pilot sites; explore and formalize mechanisms for applying lessons learned from primary pilot sites	$ 100,000	$ -	$ -	$ -	$ -	$ 100,000
5.4.4 Implement training programs for local communities and field/extension staff in applying lessons learned at secondary pilot sites; and establish ongoing information sharing mechanisms with counterparts at primary pilot sites	$ 240,000	$ -	$ -	$ -	$ -	$ 240,000
Output 5.5: Develop uniform processes, and agree upon support for, a long-term monitoring system for genetic, ecological, entomological, and epidemiological analyses at project pilot sites, based within existing programs/institutions	**$ 490,000**	**$ 70,000**	**$ 270,000**	**$ 50,000**	**$ -**	**$ 100,000**
5.5.1 Define genetic, ecological, entomological and epidemiological factors for ongoing monitoring (based on outputs of PDF-B and proposed activities under Outcomes 1-3)	$ 20,000	$ -	$ 10,000	$ 10,000	$ -	$ -
5.5.2 Evaluate existing monitoring and information management systems in order to define the bases of more effective mechanisms	$ 20,000	$ 10,000	$ 10,000	$ -	$ -	$ -
5.5.3 Establish system for ongoing monitoring at project pilot sites (using GIS and other tools)	$ 450,000	$ 60,000	$ 250,000	$ 40,000	$ -	$ 100,000
TOTAL	**$29,593,000**	**$10,000,000**	**$14,123,000**	**$ 1,070,000**	**$ 1,000,000**	**$ 3,400,000**

Annex 2P – Monitoring and Evaluation

Project monitoring and evaluation will be conducted in accordance with established UNDP and GEF procedures and will be provided by the project team and the UNDP Country Offices with support from the UNDP-GEF Regional Coordinator. The Logical Framework Matrix in Annex 2A provides *performance* and *impact* indicators for project implementation along with their corresponding *means of verification*. These will form the basis on which the project's Monitoring and Evaluation system will be built.

The following sections outline the principle components of the Monitoring and Evaluation Plan and indicative cost estimates related to M&E activities. The project's Monitoring and Evaluation Plan will be presented and finalized at the Project's Inception Workshop following a collective fine-tuning of indicators, means of verification, and the full definition of project staff M&E responsibilities.

1. Project Initiation

A Project Inception Workshop will be conducted with the full project team, relevant government counterparts, co-financing partners, the UNDP Country Offices, and representation from the UNDP-GEF HQ and/or regional staff as appropriate.

A fundamental objective of the Inception Workshop will be to assist the project team to finalize preparation of the project's first annual operating plan on the basis of the project's logframe matrix. This will include reviewing the logframe (indicators, baseline values and targets, means of verification, assumptions), imparting additional detail as needed, and on the basis of this exercise, finalizing the annual operating plan with precise and measurable performance indicators, and in a manner consistent with the expected outcomes for the project.

Additionally, the purpose and objective of the Inception Workshop (IW) will be to: (i) introduce project staff to the UNDP-GEF team that will support the project during its implementation, namely the COs and responsible headquarters staff; (ii) detail the roles, support services and complementary responsibilities of the UNDP staff vis a vis the project team; and (iii) provide a detailed overview of UNDP-GEF reporting and monitoring and evaluation (M&E) requirements. Equally, the IW will provide an opportunity to inform the project team of UNDP project related budgetary planning and budget review processes.

The IW will also provide an opportunity for all parties to understand their roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff and decision-making structures will be discussed again, as needed, in order to clarify for all the responsibilities of each party during the project's implementation phase.

2. Ongoing Monitoring Responsibilities

A detailed schedule of project reviews meetings will be developed by the project management, in consultation with project implementation partners and stakeholder representatives and incorporated in the Project Inception Report. Such a schedule will include: (i) tentative time frames for Tripartite Reviews, Steering Committee Meetings, (or relevant advisory and/or coordination mechanisms) and (ii) project related Monitoring and Evaluation activities.

Day to day monitoring of implementation progress will be the responsibility of the Regional Coordinator, based on the project's Annual Workplan and its indicators. The Project Team will inform the UNDP Country Office (Mali) of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion.

The Regional Coordinator and the Project GEF Technical Advisor will fine-tune the progress and performance/impact indicators of the project in consultation with the full project team at the Inception Workshop with support from UNDP staff. Specific targets for the first year implementation progress indicators together with their means of verification will be developed at this Workshop. These will be used to assess whether implementation is proceeding at the intended pace and in the right direction and will form part of the Annual Workplan. The national executing agencies will also take part in the Inception Workshop in which a common vision of overall project goals will be established. Targets and indicators for subsequent years would be defined annually as part of the internal evaluation and planning processes undertaken by the project team.

Measurement of impact indicators related to global benefits will occur according to the schedules defined in the Inception Workshop and outlined in the Project Logical Framework (Annex 2A).

Periodic monitoring of implementation progress will be undertaken by the UNDP Country Office (Mali) through quarterly meetings with the project proponent, or more frequently as deemed necessary. This will allow parties to take stock and to troubleshoot any problems pertaining to the project in a timely fashion to ensure smooth implementation of project activities. Field visits by the CO will also be realized on a regular basis based on an agreed upon scheduled to be detailed in the project's Annual Workplan. The CO will be responsible for preparing reports on mission findings and identify any support requirements. Findings and recommendations for action or support will be communicated to the relevant UNDP Headquarters staff in a timely manner so that the appropriate actions can be delivered in support to the project.

Annual Monitoring will occur through the *Tripartite Review (TPR)*. This is the highest policy-level meeting of the parties directly involved in the implementation of a project. The project will be subject to Tripartite Review (TPR) at least once every year. The first such meeting will be held within the first twelve months of the start of full implementation. The project proponent will prepare an Annual Project Report (APR) and submit it to UNDP-CO and the UNDP-GEF regional office at least two weeks prior to the TPR for review and comments.

The APR will be used as one of the basic documents for discussions in the TPR meeting. The project team will present the APR to the TPR, highlighting policy issues and recommendations for the decision of the TPR participants. The project proponent also informs the participants of any agreement reached by stakeholders during the APR preparation on how to resolve operational issues. Separate reviews of each project component may also be conducted if necessary.

Terminal Tripartite Review (TTR). The terminal tripartite review is held in the last month of project operations. The project proponent is responsible for preparing the Project Terminal Report and submitting it to the UNDP Country Office. It shall be prepared in draft at least two months in advance of the TTR in order to allow review, and will serve as the basis for discussions in the TTR. The terminal tripartite review considers the implementation of the project as a whole, paying particular attention to whether the project has achieved its stated objectives and contributed to the broader environmental objective. It decides

whether any actions are still necessary, particularly in relation to sustainability of project results, and acts as a vehicle through which lessons learnt can be captured to feed into other projects under implementation of formulation.

The TPR has the authority to suspend disbursement if project performance benchmarks are not met. Benchmarks will be developed at the Inception Workshop, based on delivery rates, and qualitative assessments of achievements of outputs.

3. Reporting procedures

The project proponent (International Livestock Research Institute), in conjunction with the extended project team (UNDP Country Offices and Headquarters personnel) will be responsible for the preparation and submission of the following reports that form part of the monitoring process.

a) *Inception Report (IR).* The UNDP Country Office in Mali will be responsible for program supervision and follow-up. The Project Regional Coordinator will present an inception report to the UNDP no later than three months after project start-up, immediately following the Inception Workshop. The report will include a detailed Annual Workplan divided in quarterly time-frames detailing the activities and progress indicators that will guide implementation during the first year of the project. This workplan would include the dates of specific field visits, support missions from the UNDP and/or consultants, as well as time-frames for meetings of the project's decision making structures. The Report will also include the detailed project budget for the first full year of implementation, prepared on the basis of the Annual Workplan, and including any monitoring and evaluation requirements to effectively measure project performance during the targeted 12 months time-frame. The Inception Report will include a more detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project related partners. In addition, a section will be included on progress to date on project establishment and start-up activities and an update of any changed external conditions that may effect project implementation. The report will be circulated to all the parties who will be given a period of one calendar month in which to respond with comments or queries. The report will also be reviewed by ILRI, UNDP and UNDP-GEF to ensure consistency with the objectives and activities indicated in the Project Document.

b) *Quarterly Reports to national counterparts*. Regional Coordinator will provide quarterly reports to the GEF focal point, the national executing agencies, and to ILRI on activities related at the field level and on progress with the project in general.

c) *Quarterly Reports to UNDP*. The Regional Coordinator will submit quarterly progress reports of five hundred words maximum to the UNDP Mali offices, copied to the UNDP-GEF Regional Coordinator for West Africa and to the key contact person at the UNDP-GEF offices in New York. These reports can be used as a form of specific oversight in key areas, or as troubleshooting exercises to evaluate and overcome obstacles and difficulties encountered.

d) *Annual Operating Plans*. The Regional Coordinator will present an annual workplan/ operating plan to the UNDP at the start of each year, including the levels of the performance indicators, which are described in the logical framework, to be obtained during the year.

e) *Annual Project Report (APR) / Project Implementation Review (PIR).* The Project Regional Coordinator will prepare and submit the APR/PIR, which will inform the Tripartite Review meeting (see below) and will therefore be circulated to the participants well in advance. APRs will be prepared to reflect progress achieved in meeting the project's Annual Workplan and assess performance of the project in contributing to intended outcomes through outputs and partnership work. In addition, a major tool for monitoring the GEF portfolio and extracting lessons is the annual GEF Project Implementation Review (PIR). The PIR is an annual monitoring process mandated by the GEF and has become an essential management and monitoring tool for project managers and offers the main vehicle for extracting lessons from ongoing projects. Once the project has been under implementation for a year, a Project Implementation Report must be completed by the CO together with the project and presented annually by the end of June of that year. The GEF M&E Unit provides the scope and content of the PIR. The format is defined by UNDP/GEF. Once the APR/PIR is completed, the project proponent will present the report at the TPR, highlighting policy issues and recommendations for the decision of the TPR participants. The project proponent also informs the participants of any agreement reached by stakeholders during the APR preparation on how to resolve operational issues. Separate reviews of each project component may also be conducted if necessary.

f) *Project Terminal Report.* The final APR/PIR will be regarded as the Project Terminal Report for consideration at the terminal tripartite meeting. The draft report will be distributed sufficiently in advance to allow in-house review and technical clearance by the GEF prior to the terminal tripartite review. This comprehensive report will summarize all activities, achievements and outputs of the Project, lessons learnt, objectives met and unmet, structures and systems implemented, etc. and will be the definitive statement of the Project's activities during its lifetime. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the Project's activities.

g) *Technical Reports*. Technical Reports are detailed documents covering specific areas of analysis or scientific specializations within the overall project. As part of the Inception Report, the project team will prepare a draft Reports List, detailing the technical reports that are expected to be prepared on key areas of activity during the course of the Project, and tentative due dates. Where necessary this Reports List will be revised and updated, and included in subsequent APRs. Technical Reports may also be prepared by external consultants and should be comprehensive, specialized analyses of clearly defined areas of research within the framework of the project and its sites. These technical reports will represent, as appropriate, the project's substantive contribution to specific areas, and will be used in efforts to disseminate relevant information and best practices at local, national and international levels.

h) *Project Publications*. Project Publications will form a key method of crystallizing and disseminating the results and achievements of the Project. These publications may be scientific or informational texts on the activities and achievements of the Project, in the form of journal articles, multimedia publications, etc. These publications can be based on Technical Reports, depending upon the relevance, scientific worth, etc. of these Reports, or may be summaries or compilations of a series of Technical Reports and other research. The project team will determine if any of the Technical Reports merit formal publication, and will also (in consultation with UNDP, ILRI, and other relevant parties and with the help of external specialists and staff where necessary) plan and produce these publications in a consistent and recognizable format. Project Publications will form the most visible public output of the Project, and as such should be prepared and presented to the highest scientific and

technical standards. Project resources will need to be defined and allocated for these activities as appropriate and in a manner commensurate with the project's budget.

4. Project Evaluations

The project will be subjected to at least two types of independent external evaluations as follows:-

i) *Intermediate Project Evaluations*. The project will be subject to independent evaluation 2, 5, and 8 years after start-up. The intermediate project evaluations will determine progress being made towards the achievement of outcomes and will identify course correction if needed. The evaluations will verify compliance with the performance indicators for each year, as per the log frame and the general progress made in program execution. They will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; will the extent to which the performance indicators have been fulfilled; and will present initial lessons learned about project design, implementation and management. The organization, terms of reference and timing of the intermediate project evaluations will be decided after consultation between the parties to the project document. The Terms of Reference for these intermediate project evaluations will be prepared by the UNDP Country Office.

j) *Final evaluation*. In accordance with UNDP and GEF M&E procedures, during the last six months of implementation the project will carry out an independent final evaluation to assess project achievement of objectives and impacts and document lessons learned. The final evaluation of the proposed interventions will be financed with project funds. The evaluation will assess the implementation of project and will document outcomes in participating institutions. The objectives of the final evaluation are to assess: (a) the degree to which the project achieved its objectives; (b) the efficiency of the means used to address these objectives; (c) the factors that, in general, influenced program outcomes; (d) the factors that influenced variations in impacts across participating agencies and ministries; (e) whether unexpected results are due to administrative factors; (f) the sustainability of the project results; and (g) the lessons learned with respect to building social policy analysis capacity. This information will be a valuable input for the Project Terminal Report. The Terms of Reference for this evaluation will be prepared by the UNDP Country Office (Mali).

Audit Clause

The International Livestock Research Institute will provide the Resident Representative with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of UNDP (including GEF) funds according to the established procedures set out in the Programming and Finance manuals. The Audit will be conducted by a commercial auditor engaged by ILRI.

5. Learning and Knowledge Sharing

Results from the project will be disseminated within and beyond the project intervention zone through a number of existing information sharing networks and forums. In addition:

- The project will participate, as relevant and appropriate, in UNDP/GEF sponsored networks, organized for Senior Personnel working on projects that share common characteristics. UNDP/GEF shall

establish a number of networks, such as agro-biodiversity conservation, that will largely function on the basis of an electronic platform.

- The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned.

The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Identify and analyzing lessons learned is an on- going process, and the need to communicate such lessons as one of the project's central contributions is a requirement to be delivered not less frequently than once every 12 months. UNDP/GEF shall provide a format and assist the project team in categorizing, documenting and reporting on lessons learned. To this end a percentage of project resources will need to be allocated for these activities.

6. Indicative Monitoring and Evaluation Workplan and Corresponding Budget

Type of M&E activity	**Responsible Parties**	**Budget US$** *Excluding project team staff time*	**Time frame**
Inception Workshop	▪ Regional Coordinator ▪ UNDP CO	None	Within first three months of project start up
Inception Report	▪ Project Team ▪ UNDP CO	None	Immediately following IW
Measurement of Means of Verification for Project Purpose Indicators	▪ The Regional Coordinator will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members	To be finalized in Inception Phase and Workshop	Start, middle and end of project
Measurement of Means of Verification for Project Progress and Performance (measured on an annual basis)	▪ Oversight by Project GEF Technical Advisor Regional Coordinator ▪ Measurements by regional field officers and local IAs	To be determined as part of the Annual Workplan's preparation[1]	Annually prior to APR/PIR and to the definition of annual work plans
APR and PIR	▪ Project Team ▪ UNDP CO	None	Annually
TPR and TPR report	▪ UNDP CO ▪ UNDP HQ staff ▪ Project Team	None	Every year, upon receipt of APR
Steering Committee	▪ Regional Coordinator	None	Following Project

Meetings	▪ UNDP CO		IW and subsequently at least once a year
Periodic status reports	▪ Project Team	25,000	To be determined by Project team and UNDP CO
Technical reports	▪ Project Team ▪ Hired consultants as needed	35,000	To be determined by Project Team and UNDP CO
Project Publications	▪ Project team	25,000	To be determined by Project Team and UNDP CO
Intermediate External Evaluation	▪ Project team ▪ UNDP CO ▪ UNDP HQ staff ▪ External Consultants (i.e. evaluation team)	60,000	At years 2, 5, and 8 of project implementation.
Final External Evaluation	▪ Project team, ▪ UNDP CO ▪ UNDP HQ Staff ▪ External Consultants (i.e. evaluation team)	40,000	At the end of project implementation
Terminal Report	▪ Project team ▪ UNDP CO ▪ External Consultant	None	At least one month before the end of the project
Lessons learned	▪ Project team	30,000 (average 3,000 per year)	Yearly
Audit	▪ UNDP CO ▪ Project team	15,000 (average $1,500 per year)	Yearly
Visits to field sites (UNDP staff travel costs to be charged to IA fees)	▪ UNDP Country Office ▪ UNDP-GEF Regional Coordinating Unit (paid for out of their own budget) ▪ Government representatives	30,000 (average one visit per year)	Yearly
TOTAL INDICATIVE COST *Excluding project team staff time and UNDP staff and travel expenses*		US$260,000	

[1] (Each Annual Workplan will contain progress indicators that will need to be verified. In many cases this includes an M&E cost which needs to be factored into the project's M&E budget. The Inception Workshop will identify some of these indicators as part of the support provided in the Annual Workplan's preparation, hence the resource allocation remains notional at this stage).