

AFRICAN DEVELOPMENT FUND



**MAURITANIA : GRAZING LAND MANAGEMENT AND LIVESTOCK
DEVELOPMENT PROJECT**

SUMMARY OF ENVIRONMENTAL IMPACT ASSESSMENT

ISLAMIC REPUBLIC OF MAURITANIA

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1. Introduction

1.1 The Government of the Islamic Republic of Mauritania is seeking to increase the incomes of agro-pastoralists and stockbreeders by increasing the productivity of grazing lands and animal production. To that end, a livestock development and grazing land management project was prepared by the FAO in November 1998, at the request of the African Development Bank and the Government of Mauritania. The project, scheduled to cover five years, draws on the outputs of a previous project, entitled "Livestock I", jointly financed by the ADB and the World Bank. The main conclusions of the mission show that the project is fully consistent with the grazing land management and livestock development strategy in Mauritania. More specifically, the project aims at (i) structuring the rural community through the cooperative system, (ii) ensuring better management of natural resources and processing of animal products, (iii) developing milk production in the Trarza and (iv) ensuring the participation of cooperatives and their unions in investment decisions.

1.2 In view of the fact that extensive stockbreeding and transhumance areas can be easily damaged, it has become necessary to prevent all risks of damage and safeguard the carrying capacity of lands. In compliance with ADB environmental assessment guidelines, the project in question has been classified in Category 1 and a detailed environmental impact assessment (EIA) has been conducted in line with terms of reference defined by the ADB. The EIA report was therefore prepared by the FAO Investment Centre Division for the ADB and the Government, in accordance with the relevant ADB procedures. It seeks to provide the Government and the ADB with: (a) information on the status of the environment in the project areas; (b) an assessment of the potential impacts of the proposed activities and investments on the environment; and (c) proposals of corrective measures to mitigate the negative impacts, and measures to strengthen the positive impacts.

2. Project Description

2.1 The project draws on the outputs and lessons from previous projects and is justified by the importance of livestock in the national economy, as well as the Government's desire to support the sector by greater involvement of agro-silvo-pastoral cooperative associations which sustain the operations, through their participation in the decision-making process. It contributes to the achievement of the Government's policy objectives in agriculture, livestock, the environment and poverty reduction, by eliminating three major development constraints: (a) non-participation of the population in the making of decisions that concern them; (b) inadequate structuring of the rural community and failure to involve the local population as financially committed partners in the projects; and (c) the limited quantity and poor management of available resources. The project accompanies in its area of operation, to different extents depending on the region and in complementarity with other projects, the Government's

divestiture policies and operating strategies for the sustainable exploitation of natural resources, the processing of animal products and poverty reduction. It should allow for better insertion of pastoralists, agro-pastoralists, farmers and the pastoral population into a new economic base.

2.2 Its specific objectives are:

- structuring of the rural community through the cooperative system. This objective comprises: (i) the organization of cooperatives and their unions, and (ii) the creation of a socio-economic atmosphere that is conducive to the emergence of buoyant economic sectors;
- the best possible management of grazing lands and processing of animal products;
- the development of milk production in the Trarza; and
- the participation of beneficiaries in the making of decisions concerning any investments financed by the project.

2.3 Its activities will, for each of the four specific objectives, concern:

- strengthening the cooperative system by training and equipping the actors, the establishment of Mobile Multi-purpose Teams (EMP), the establishment of revolving funds, and support for the establishment of Cooperative Credit Unions (CCEC);
- the preparation of grazing land management plans for cooperatives and their unions; grazing land development and pastoral improvement (pastoral water management, regeneration, planting of trees, firebreak, mowing, etc.) operations; and stockbreeding operations (inoculation centres, night pens, barns, etc.);
- research and development on fodder crops and genetic improvement, and assistance and advisory services for stockbreeders;
- the establishment of regional joint commissions for the selection of projects to be submitted to the Pastoral Development Fund (FDP) and a national commission to approve them.

2.4 The project cost, including provision for physical and price contingencies, would be UM 2.94 billion (US\$ 14 million), 27% of which would be in foreign exchange. Its economic rate of return, estimated over twenty years, would be 10%. Possible financing for the project would be as follows: beneficiaries 15%, Government 15% and ADB 70%, or UM 2.3 billion (US\$ 10.9 million).

2.5 As for the expected outputs, the additional production of the project at full development would be about 620 tonnes of beef and 1600 tonnes of mutton and goat meat (kg live) which would be marketed locally and on export markets. The additional milk produced in traditional stockbreeding by wilaya cooperatives (1,050 tonnes) would be used for family consumption and supplies to regional capitals. Milk from the Trarza would be sold directly to the milk collection centres which supply Nouakchott.

2.6 The organization of the proposed project seeks to integrate about forty agro-silvo-pastoral cooperatives located in the nine major stockbreeding areas, grant financial management autonomy to the project, and focus activities on the design, programming, implementation and monitoring of operations; implementation will be sub-contracted to qualified operators: the technical services of the Ministry of Rural Development and the Environment (MDRE), NGOs, consulting firms and private enterprises.

2.7 The institutional set-up would comprise: (i) a management and coordination team based in Nouakchott and attached to the Department of Livestock and Agriculture of MDRE; a financing unit comprising an FDP and CCEC; and (iii) a control and coordination commission, responsible for approving the work programme and budget, presided over by the MDRE General Secretariat and comprising all project partners.

2.8 The operational core of the project would comprise the EMPs, which would be responsible for outreach activities, mobilization, training and extension services for agro-pastoralists who are members of the cooperatives. The EMPs, in collaboration with forestry consultants, would also be responsible for preparing a participatory analysis of grazing land management plans, as well as for programming and implementing development operations, which would be submitted to the FDP and CCECs for financing. The FDP, which would allocate investment funds to agro-silvo-pastoral cooperatives, would have a joint selection commission at the regional level, comprising representatives from the MDRE, the EMP and cooperative unions, and a joint approval commission at the national level. Development operations would be carried out in collaboration with the beneficiaries by the operators, technical services, NGOs, private enterprises, etc. The CCECs would be initiated, trained and supervised by a team of decentralized financing experts from the Oasis project. Monitoring and evaluation would be undertaken by the project team working in collaboration with the EMPs and beneficiary cooperatives (self-evaluation).

3. The Existing Environment

3.1 The environment in Mauritania is relatively hostile and fragile, and marked by the scarcity of water resources. The climatic constraints are severe, and marked by continued reduction in rainfall from the North to the South and great variations from one year to another, with possible differences of more than 70% deficit in comparison to the normal. Three-quarters of Mauritanian territory are in the Saharan zone where the average annual rainfall is below 100 mm. In 1992, it was estimated that 10% of the Mauritanian territory had an average annual rainfall of over 200 mm.

3.2 Data on the environment in general, natural resources and natural environmental degradation are fragmentary, unreliable and often contradictory (with the exception of climatological data carefully recorded and kept for a long time now). Mapping equipment (topographical and thematic maps) is limited and generally too old and inaccurate. The lack of objectively verifiable indicators is often an important constraint on the planning of rational exploitation of natural resources to ensure sustainable development of the country.

3.3 Although it is difficult to assess environmental degradation quantitatively and qualitatively, its occurrence in Mauritania is indisputable and is generally attributed to three factors: drought, man and cattle. Climatic conditions, which have deteriorated significantly throughout the Sahel with successive periods of drought (1968-73, 1976, 1982-85 and 1991-92), have made profound changes to the natural environment by: (i) speeding up irrigation schemes in the river valley, (ii) intensifying movement from the northern areas and settlement of the population and herds, and (iii) acting either directly on the natural environment and the potential of natural resources (poor plant growth, poor recharging of water tables, trend towards silting and desertification), or through the population including pressure on the resources concerned in particular surface and ground water, wood (firewood, charcoal), grazing lands and arable lands. Human action on the environment is particularly visible in the river valley where the development of irrigated agriculture has had the following impacts, in particular: (i) increased use of space to the detriment of traditional activities and environmental balance (reduction of forest areas, grazing lands, etc.); (ii) densification and concentration of human population; (iii) the development of water-borne diseases; and (iv) land degradation (salinization, alkalinization). Cattle movements towards the river valley during the years of drought put very strong pressure on some areas (Brakna, Gorgol and Guidimakha) and raised problems relating to the overexploitation of resources, access to water and the coexistence of stockbreeding and farming.

3.4 Mauritania therefore faces three major problems:

- degradation of the plant cover which leads to intense wind erosion, and considerable expansion of silting, due to the displacement of sand dunes, thereby threatening built-up areas and infrastructure (roads, irrigation schemes, hydraulic structures, etc.);
- the disruption of land use systems, with the rapid and forced settling of a large part of the population who were formerly nomadic, accelerated urbanization without basic infrastructure especially in Nouakchott and its environs (which account for 25% of the country's population) and concentration of the population and cattle on a river-sea strip;
- overexploitation of natural resources, as in mining. Consequently, the national annual quantity of firewood used would be ten times the potential exploitable quantity, thereby putting considerable pressure on the forests which, if the current pace continues, will disappear in the near future.

4. "Without Project" Alternative

The challenges of environmental degradation control must therefore be assessed in the light of the fact that more than 65% of the population of Mauritania depend on the country's biological resources for their food security and income. Consequently, without the activities and measures proposed for management of grazing lands by the grassroots agro-silvo-pastoral cooperatives, and the cofinancing of infrastructure and livestock development activities (stock-watering wells, milk collection installations, processing of livestock products, inoculation centres) by these cooperatives, it is feared that more cattle would be sold – without reducing the herds – to traders, civil servants and big absentee livestock business persons, thereby intensifying the phenomenon observed during periods of drought. The consequences of such a scenario are the impoverishment of petty stockbreeders, who are members of agro-silvo-pastoral cooperatives and abusive exploitation of natural resources, without the involvement of the village and pastoral communities in their management,

thereby jeopardizing the viability of the already threatened ecosystems: mining and inefficient management of grazing lands, illegal deforestation activities, low productivity of plantations, and lack of appropriate infrastructure. Without equitable distribution of livestock income for the benefit of more stockbreeders and small pastoralists under these circumstances, there would be marked impoverishment of the rural areas, mainly stockbreeding, leading to rural exodus, overexploitation of passage ways, poorer quality public health and education services in which village and pastoral communities participate. For these reasons, the EIA concluded that the “without project” alternative was inappropriate.

5. Major Impacts

5.1 The project will have an overall positive environmental impact. By its own very nature – grazing land management and livestock development - it totally integrates stockbreeding into the environmental component, and will thereby treat the major causes of the degradation of pastoral resources.

5.2 The negative impacts could concern mainly:

- the desertification of areas around water points, milk collection centres and, to a lesser extent, around inoculation centres because of spatial concentration of cattle, and therefore overgrazing;
- over-exploitation of water resources in comparison to its renewal capacities (drop in the piezometric level in the wells/bore holes, silting of hillside dams);
- increase in loan costs and stockbreeders’ indebtedness as a result of participation in investments and maintenance of grazing land development and pastoral improvement facilities.

5.3 These negative impacts are largely counterbalanced by very important positive impacts:

- restoration and increase in grazing land productivity, as well as improvement of sustainable management of pastoral resources (grazing lands and water points);
- improved watering of cattle and opening up of unexploited grazing land by increasing the number of water points;
- improved cattle health;
- improvement in the quality, quantity and security of animal production (meat and milk);
- increased food security, improved living conditions and poverty reduction among the rural population;
- change in stockbreeders’ attitude as a result of the participatory approach to project implementation: from passive beneficiaries, they will become partners and promoters as well as actors of their own development; greater empowerment of beneficiaries should lead to more appropriate definition of activities and ownership of outputs by users, which guarantees their sustainability;
- the integration of CCECs into the formal financial system which will, in particular, limit investment in cattle by mobilizing savings; and
- the integration of livestock production and farming systems in rain areas which will save some intermediary use, in particular fertilizers.

6. Corrective Measures

6.1 A series of attendant measures were recommended to mitigate or reinforce the impacts identified. As regards the physical environment, the measures concern:

- the policy of empowering stockbreeders' associations which should be supported by the Government and should clearly define the rights of associations in matters relating to the use and management of pastoral areas (grazing lands and water points);
- the participatory approach (participation by beneficiaries in the definition and implementation of activities) involves, at project start-up, a vast sensitization and information campaign for stockbreeders on project objectives, the approach and working methods, and the respective roles of the various participants;
 - management instructions and maintenance procedures for structures; management strategy and sharing of water among the users; and the monitoring of the water table through piezometric measurement campaigns.
 - rigour in the management and control of the operating conditions of water points as regards: the desired period and duration of use during the year; the prohibition, if need be, of grazing near water points; the population of cattle, and development of the surroundings of wells (in compliance with a standard plan to be proposed to stockbreeders' associations) and environmental education for users;
 - acceptance of the prohibition of grazing by the stockbreeders, their discipline and their authority to enforce it are fundamental for the success of the operation and limiting of its implementation cost; self-discipline by stockbreeders, in particular, will make it possible to avoid or reduce the very expensive fences which generally accompany the prohibition.
 - the development and intensification of fodder crops on irrigated areas in the river valley (activity provided for under the Irrigated Farming Integrated Development Programme - PDIAIM) should offset the fodder shortfall from the grazing lands.

6.2 As for the human and institutional environmental impacts, the project recommends:

- the preparation of land use plans (POS) in the valley; this would be accompanied by a sensitization and information campaign for farmers, settled agro-pastoralists, and nomadic pastoralists on herd management rules in the various villages.
- assistance for the installation of private nursery owners.
- need to demarcate access passage ways to the river for cattle, under the POS.
- support for the development of irrigated fodder crops is provided for under PDIAIM.
- participation by the grassroots actors (stockbreeders who are members of cooperative associations) in investment decisions, and not reserve decision-making powers only to the executive members of cooperative associations (roles of the boards of directors and general assemblies).

6.3 Finally, measures for impacts on animal production will be as follows:

- the close and regular monitoring of the stock of drugs (expiry dates) and revolving fund accounts;

- the animal load will be adapted to the potential of the land (irrigated farming + grazing lands in the river area, grazing lands + wells in rain areas); to do this, periodic estimates of pastoral resources will be conducted on the basis of available satellite imaging in Agrhymet Centre, Nouakchott.

7. Environmental Monitoring

7.1 These impacts, which are the outcomes of project activities, will be monitored by the project monitoring-evaluation unit, with the participation of two experts, and in the field by the EMPs and trained members of the agro-silvo-pastoral cooperatives (self-monitoring of activities). The information gathered from indicators should make it possible, given the current environmental situation, to measure the project environmental impacts, and if possible, the impacts of similar projects being implemented in the same regions, and to prepare an operational performance chart on the status of the environment likely to remedy any action that can degrade the environment. The monitoring system should gradually increase the capacity of all participants and create an "environmentalist culture".

7.2 The main objectives of the proposed monitoring programme concern:

- the monitoring of pastoral resources, in particular variations in the production of fodder biomass during the year, which is indispensable for the management and planning of cattle movements, prohibitions of grazing, mowing and use of water points; the monitoring will be conducted through periodic interpretation of satellite imaging and field surveys;

- the monitoring of water points (wells, bore holes, ponds) for rational management of water with the active participation of management committees in pastoralist associations;

- the monitoring of the composition of herds and income earned from rearing them in the pastoral areas (cost-benefit analysis and influence of destocking on the environment);

- monitoring of the population around semi-sedentarization points for stockbreeders who are members agro-sylvo-pastoral cooperatives and social services.

7.3 The cost of the environmental monitoring of project activities and the establishment, under the supervisory authority of the Department of the Environment and Territorial Development, of a coordination committee responsible for the coordination of environmental activities by the various participants in the project area was estimated at UM 74.86 million (US\$ 348 000) or 2.5% of the project cost. The table below shows the budget estimates in detail.

Budget Estimates for the Monitoring of Pastoral Resources (x UM 1000)

Description	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Total
1. Grazing lands						
Staff training ^(*)	3200	1600	1600	1600	1600	9600
Equipment (GPS, scales, sickles)	600					600
Staff allowance ^(**)	2010	2010	2010	2010	2010	10050
Office supplies	1250	1250	1250	1250	1250	6250
2. Water points						
Constitution BDD	20000					20000
Piezometric monitoring Equipment						
Piezometers (50)	1600					1600
Electric drills (5)	650					650
Conductivity meters (2)	160					160
Motor cycles (4)	1550					1550
Operating costs						
Motor cycles ^(***)	600	600	600	600	600	3000
Allowances for technicians observers ^(****)	960	960	960	960	960	4800
Technical Assistance ^(*)	3200	1600	1600	1600	1600	9600
Formation water point committees	500	500	500	500		2000
TOTAL	36280	8520	8520	8520	8020	69860
(*)	1 SM technical assistance in year 1 and 0.5 SM from year 2 to year 5					
(**)	Agrometeorology Service: 1 person, 6 months/yr at UM 55 000 per month MDRE field workers: 14 persons, 6 months/yr at UM 20 000 per month					
(***)	15 000 km/yr/motor cycle at UM 10 per km					
(****)	4 technicians at UM 20 000 per month					

8. Consultations

The EIA preparation team held regular consultations with the parties concerned with the project and, in particular, with the members of the National Pastoralist Associations Group (GNAP) and the National Agro-silvo-pastoralist Cooperative Associations Group (GNACASP). Several field surveys provided useful information on the distribution and development of stockbreeders' groups, pastoral practices, the development of mobility, and the economic activities associated with stockbreeding. The EIA team gathered and summarized the results of various surveys and available publications. The results were used in preparing an Atlas which presents an overall view, as well as a visual and static list of pastoralist associations in Mauritania. The Atlas is a reference document for project implementation and a working instrument for services involved in supervisory programmes for pastoralist associations.

9. Conclusions

9.1 Project activities aim at revitalizing agro-silvo-pastoral cooperative structures and facilitating the emergence of new associations based on empowerment and self-management. They strengthen the self-promotion capacities of grassroots cooperatives and, through their technical training, agro-pastoral initiatives in the management of grazing lands and their herds; they help them to know the environment they manage. Sustainability of livestock-related activities depend on ownership and land use by the pastoralists in the grassroots cooperatives.

9.2 Consequently, the project will have an overall positive environmental impact. By its very nature – grazing land management and livestock development - it completely integrates livestock into the environmental component, and will thereby treat the principal causes of the deterioration of pastoral resources. Non-implementation of the project will have a major negative impact: the ongoing physical and human environmental degradation in stockbreeding areas would continue. In fact, the productivity of natural grazing lands would continue to decline unless there is a significant increase in the levels of rainfall.

9.3 This EIA summary of the grazing land management and livestock development project has therefore been submitted to the Board of Directors for information.

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