

**ENVIRONMENTAL REVIEW OF DJIBOUTI LIVE ANIMAL
EXPORT FACILITY DEVELOPMENT PROJECT**

Prepared by:

**E.K. Wahome
REGIONAL ENVIRONMENTAL ADVISER, USAID/REDSO/ESA**

For

Djibouti Live Animal Export Facility Development Project

August 11, 2003

Project Background

The Djibouti Live Animal Export Facility Development Project is being implemented by Djibouti Livestock Exporters' Association, the Red Sea Livestock Trade Commission and the AU-IBARs' Pastoral Livelihoods Programme. The project purpose of the project is to promote regional livestock export trade in the expanded Greater Horn of Africa (GHA), as a part of the Regional Agricultural Trade Expansion Support (RATES) program. The area of operation covers Sudan, Eritrea, Ethiopia, Regions of Somalia, Kenya, Rwanda, Burundi, Uganda, Tanzania, Zambia, Arabian Peninsular and the Middle East Countries (Maghreb Countries, Arabia, Egypt, Syria, United Arab Emirates, Kingdom of Saudi Arabia, Yemen, secondary emphasis on Libya, Jordan, Lebanon, Bahrain, Kuwait, Oman, Qatar, Iran, Iraq and Palestine National Authority).

The project aims to facilitate, promote, support and co-ordinate livestock trade within the region, through advocating and lobbying for standardized import and export requirements, and encouragement of private sector participation in providing certification services for livestock inspection. This includes collaboration in the development of prediction and decision support systems for climate, biomass and Rift Valley fever to enhance sustainable livestock trade. The principal activities for bringing full livestock trade operation relies on creating effective, and smoothly operating livestock export processing zones for live animals, and harmonizing trade policy and livestock movement regulations.

Purpose of Environmental Review

The purpose of environmental review is to assist the project planning and design team in identifying potential adverse environmental impacts due project implementation and management activities, and their appropriate mitigation and monitoring measures. The emphasis is on incorporation of adverse impact mitigation and monitoring measures in the plan and design for ensuring that the project is environmentally-sound. This includes establishing linkages with the host country sectoral environmental guidelines for implementation of adverse impact mitigation and monitoring measures so as to minimize or prevent their occurrence.

The USAID ADS 204 requires that the SO Team Leaders and the activity Development Partner's establish a monitoring and evaluation process for the project implementation and management activities so as to ensure that they remain in compliance to 22 CFR Part 216 environmental regulations. This includes review of program performance reports and undertaking of periodical field visits to assess the status of implementation and performance of recommended adverse impact mitigation and monitoring measures so that opportunities for timely modifications of mitigation measures for improved performance can be implemented.

Description of Project Activities

The proposed project implementation and management activities include the following:

Project Implementation Activities: The proposed project implementation activities include the following:

- Selection of project site, covering an area of between 150 – 200 hectares in an area with multiple land-use types, that include pastoralist nomadic grazing, marginal agriculture, military training facility installations and nature conservation.

- Construction of livestock holding pens and quarantine structures for holding about 35,000 sheep and goats and 3,500 – 4,000 camels and cows for a period of 2 – 3 weeks during Project Phase I, and a total of 200,000 animals for a period of 2 – 3 weeks, during Project Phase II.
- Construction of water supply pipelines for delivery of livestock water to the holding pens and quarantines, from about between 15 – 20 wells, during Project Phase I. The available water is not sufficient for more than 40,000 animals at a ago. For Project Phase II an alternative source of water will be required, that will involve the installation of a seawater desalinization plant.
- Construction or rehabilitation of access roads to the holding pens and quarantines, and from the holding pens to the ship loading point (jetty) for export.
- Construction of temporary structures for administrative offices, residential houses for herdsmen, stores for veterinary pharmaceuticals and fodder storage, and a laboratory for livestock disease diagnosis and testing.
- Construction of water storage tanks and drinking troughs structures for livestock water supply.
- Training of local veterinary technicians for livestock disease testing, diagnosis and vaccination procedures.
- Development of a unique livestock identification procedure for certification of individual animals and quality control.
- Development of facilities for isolation of sick animals as well as disposal facilities for animals that do not pass the inspection process, and are considered a risk for sale, or introduction into the local market, including safe disposal of dead animals.
- Development of a livestock loading point (jetty) close to the livestock holding pens (current distance to the loading point is 12 km away).

Project Management Activities: The proposed project management activities include the following:

- Holding of live animals, including about 35,000 – 40,000 sheep and goats and 3,500 – 4,000 camels and cows in the holding pens and quarantines for a period of 2 - 3 weeks before shipment, during Project Phase I. There will be a total of about 200,000 animals in the holding pens and quarantines for 2 – 3 weeks, during Project Phase II.
- Supplying large amounts of water to the animals per day, which could cause high rates of water abstraction from the wells, creating high competition for water with the city residents, and risk of seawater incursion into the wells.
- Supplying large amounts of fodder to the animals during the fattening period while in the holding pens and quarantines.
- Spraying the animals with chemicals against ecto-parasites attack (ticks, mites, etc.) while in the holding pens and quarantines.
- Testing the animals for presence of disease (e.g. Brucellosis, etc.), involving collection of blood samples for laboratory testing using syringes, needles and sample storage bottles.
- Disposal of animals that do not pass the inspection process, isolation of sick animals as well as safe disposal of dead animals.
- Disposal of solid and liquid animal waste from the holding pens and quarantines to be used as manure in the nearby marginal agricultural fields, or as fuel for domestic use.
- Annual rotation of pens and quarantines structures for environmental restoration and improvement.

Description of Project Site Environment

The project area is located along the coast in an area that covers 150 – 200 hectares, about 15 km to the south-east of the City of Djibouti. An understanding of how the various environmental parameters occurring in the project area will be affected by the project implementation and management activities would make it possible to identify potential adverse environmental impacts, and their appropriate mitigation and monitoring measures. The following are the existing environmental parameters:

Climate: The area is in an arid climatic zone which covers the whole country, with daily average temperatures ranging from 25 – 34 degrees Centigrade. The highest mean monthly temperature is 40 degrees Centigrade on the Red Sea coast, during the hottest months. The mean annual rainfall averages under 250 mm/year, and is highly seasonal, mainly occurring in a single rainy season between the months of May – June, without a predictable rainfall pattern.

The average evaporative demand is over 2,500mm/year, which is an important environmental factor affecting the growth of vegetation in the area, since it determines the amount of water that finally becomes available for plant growth. This shows that a high moisture deficit exists in the project area, between rainfall and evaporative demand, which is a limiting factor on the growth of natural vegetation. Dry seasons, which comprise the number of successive months with less than 30 mm of rainfall, occurring in the project area, may last up to 12 months during the very dry years.

Vegetation: The vegetation type is mainly rangeland (uncultivated land that will support grazing or browsing animals), which is highly influenced by the average evaporative demand, moisture deficit, and browsing by livestock. It is comprised of poor grassland and scrub, with sparse herbaceous cover, dominated by annual grasses and forbs, such as Panicum turgidum, a perennial grass that becomes an annual during the years of insufficient rainfall, and annual Aristida mid and short grass. The high variability of rainfall and intensive overgrazing strongly influences the composition of herbaceous vegetation cover.

The woody vegetation cover consists of scattered, mostly evergreen shrubs and low trees, such as Acacia sp., Suaeda sp. (succulent shrubs), Balanites orbicularis, Bosia minimifolia, Dobera grabla and Cadaba glandulosa. Those that grow along the larger and smaller seasonal water courses are Tamarix sp. and Leptadenia pyrotechnica. The recently introduced exotic woody plant species, known as Prosopis juliflora, is an invasive drought tolerant, fast-spreading brown thorny shrub with hairy evergreen leaves.

Topography: The project area has a gentle slope that is a part of a coastal plain of up to 110 km wide, bordering the Red Sea and the Gulf of Aden. The elevation ranges from 0 (sea level) to 500 m at the escarpment. There is presence of sand dunes along the coastline.

Soils and Geology: The area is composed of rock sediments derived from geologically very old metamorphic rocks (Basement Complex), sediments of marine origin and more locally, geologically young basalts (dark – colored igneous rocks) that underlie the region.

The soils are predominantly sandy, and consolidated (firm) and loose sands occur in the area. Also, soils that are saline (due to flooding during high tide), shallow, calcareous and which have stone mantles are common. The soils are not highly developed, as is typical of arid environments, and they closely resemble the underlying parent materials (rocks and sediments).

Surface Drainage/Hydrology : The project area is well drained, being on a gentle slope. There are widespread features of large and small seasonal watercourses that show the occurrence of torrential flow during the wet seasons. The area is very close to the coastline, and some parts become flooded with seawater during the high tide. The area no permanent rivers and streams flowing through the area, or near the area, but there are features of small and large dry river beds that have signs of torrential flow during the wet seasons.

The area is underlain by rocks of the Basement System (gneisses and schists and their associates), and the underground water aquifer is confined to the softer and more deeply weathered member. There is a nearby area where these rocks are exposed by denudation, allowing an outlet of the contained water, in form of a spring, where some human settlements and marginal agricultural fields are found. The main source of water in area is through boreholes and wells.

Population: The area is sparsely populated, mainly by nomadic pastoralists and marginal agriculturalists.

Land-Use: The area is being utilized as a pastoralist grazing area, small-scale marginal agricultural production, military training and nature conservation. There are fencing structures (with wooden poles and wires) surrounding the military training facilities and the nature conservation area, and temporary bush fences around the marginal agricultural areas.

Assessment of Environmental Impact Potential

The assessment of environmental impact potential involves close evaluation of project implementation and management activities with respect to the existing project site environmental parameters. The assessment includes impacts that have occurred before project implementation starts due to existing land-use types, during project implementation and operation stage, as well as the environmental restoration of the project site during the rotation of holding pens and quarantines.

Environmental Impacts Before the Project: The present environmental impacts in the project area are those due to the existing land-use types and management practices. They include the following:

- Reduction of natural vegetation cover caused by overgrazing on the herbaceous vegetation and over browsing on woody cover by livestock, as well as bush clearing for marginal agricultural practices.
- Reduction of natural vegetation cover caused by drought during the dry seasons.
- Accelerated soil erosion occurrence due to overgrazing, bush clearing for expansion of poorly regulated marginal agricultural practices, and ground surface trampling by livestock.
- Presence of the highly invasive recently introduced exotic woody shrub, known as Prosopis juliflora which, if not controlled may end up suppressing the growth of natural vegetation in the area. The plant is known to take over grazing areas where it has been introduced, and is blamed for causing livestock deaths due to poisoning after eating the leaves over a certain period. It forms extensive impenetrable thickets that gradually choke up other plants, leaving much of the soil bare and highly prone to erosion.

The project implementation and management activities should be carried out in such a way that the existing impacts are minimized or prevented where possible, so that the quality of the project environment can be enhanced.

Environmental Impacts During Project Implementation: The impacts caused by project implementation activities include both physical environmental impacts and socio-economic impacts as follows:

Physical Environmental Impacts

Negative Impacts:

- Reduction of natural vegetation cover during bush clearing for ground preparation, for the construction of fencing structures for holding pens and quarantines, administrative offices, residential houses, laboratory and fodder storage facilities, establishment of water supply pipelines and storage tanks, water and sanitation facilities, and construction of project area access roads.
- Accelerated soil erosion occurrence due to bush clearing and ground preparation for the construction of project structures, water pipelines and storage tanks, and construction of project access roads.

Socio-economic Impacts

Positive Impacts:

- Generation of employment opportunities for the local people during the ground preparation activities for construction of project structures, water supply pipelines, and during the rehabilitation and construction of project access roads.
- Creation of business opportunities for local dealers selling fencing materials (poles and wires) for the construction of holding pens and quarantines, and other structures, and pipes for the construction of water supply facilities.

Negative Impacts:

- Decrease of the area available for nomadic pastoralist grazing, marginal agricultural production, and future expansion of military training facilities and nature conservation.
- Possible land-use conflicts among the main stakeholders in the area (nature conservation, expansion of military training facilities and local residents practicing nomadic grazing and marginal agriculture).

Environmental Impacts During Project Operation: The impacts caused by project operation activities include both physical environmental impacts and socio-economic impacts as follows:

Physical Environmental Impacts: These include both positive and negative impacts

Positive Impacts: The accumulation of livestock waste, in form of dung and urine, in the project area will contribute to the enhancement of soil fertility due to the increase of soil organic matter content, and allow for increased and vigorous growth of natural vegetation during rotation cycles of the holding pens and quarantines.

Negative Impacts:

- Decrease of natural vegetation cover in the holding pens, quarantines and surrounding areas, due to overgrazing and over browsing, and increased ground trampling by the high livestock populations.
- Accelerated soil erosion occurrence due to water and wind caused by the decreased protective vegetation cover, and increased ground trampling in the pens, quarantines and surrounding areas by livestock.
- Possible seawater incursion into the wells, due to increased poorly regulated rates of livestock water abstraction from the wells.
- Possible pollution (contamination) of the groundwater aquifer through seepage of liquid livestock waste during the heavy rainfall seasons.
- Possible pollution (contamination) of seawater during the high tide by solid and liquid livestock waste.

Socio-Economic Impacts: These include both positive and negative impacts:

Positive Impacts:

- Generation of employment opportunities for the local people as laboratory technicians, clerks, store men, cleaners, water supply pump attendants, etc.
- Increased generation of domestic income for the pastoralists through increased sales of livestock within the Greater Horn of Africa (GHA) region.
- Generation of revenue for the Government of the Republic of Djibouti through taxation of income from sales of livestock.

Negative Impacts:

- Possible introduction of new livestock diseases in the project area, due to high concentration of livestock from other areas, that could decimate the local populations.
- Possible conflicts on water resource use due to increased competition for water between the livestock and the city residents water supply.

Environmental Mitigation and monitoring Plan

The recommended mitigation and monitoring measures are meant to prevent or minimize the occurrence of negative impacts, as follows:

Mitigation Measures: These measures should be identified for the project implementation and management activities involving construction of structures, new or rehabilitation of existing roads and rails, well water abstraction rates, etc., that have a potential to cause adverse environmental impacts, so as to ensure an environmentally-sound project planning and design. The measures should inform the original project design by being well incorporated, with appropriate modifications in the implementation and management activities. The recommended adverse impact mitigation measures are as follows:

- Selection of project site should involve all the main stakeholders (planning and design team, Government of Djibouti Department of Environment, local residents, military representatives, nature conservationists, etc.) so as to prevent future land-use conflicts in the area.

- Vegetation clearing and ground preparation activities for the construction of project structures, water supply facilities, and access road construction and rehabilitation, should be carried out with due consideration to “best practices” to prevent decrease of natural vegetation cover and accelerated soil erosion occurrence.
- Safe rate of water extraction from the wells for livestock use should be determined to avoid the contamination of well water by seawater incursion into the wells, that would make the well water permanently saline and unsuitable for use.
- Water and sanitation facilities for project employees and pastoralist herdsmen should ensure the availability suitable drinking water, and proper management of human waste. This should include proper location of latrines to prevent the contamination of well water through seepage of liquid human waste.
- Introduction of new animals into the area should be approached with caution, since it could introduce new diseases that could decimate local animals.
- Livestock holding pens and quarantines should be rotated on annual basis cycles to allow for restoration of the environmental condition, through regeneration of natural vegetation, and reduction of soil loss due to erosion.
- Training of veterinary technicians on proper storage, handling and application of chemicals (using gloves and proper clothing) for control of ecto-parasites, and safe disposal of empty chemical containers, to ensure appropriate human health and safety (H&H) measures.
- Pastoralist communities should be encouraged to plant trees in the project area during the rainy seasons for environmental condition restoration and improvement (especially in areas previously occupied by the pens and quarantines).

Monitoring Measures: Monitoring measures make it possible to confirm that the implemented mitigation measures are preventing or minimizing the occurrence of adverse impacts as required, and whether there are other unforeseen impacts. They must be seen as a dynamic process and as a key component of a successful project implementation and operation. This makes it possible to effectively assess the performance of mitigation measures for necessary improvement or replacement, using selected indicators (vegetation ground cover, soil erosion features, measurement of water quality, etc.). The recommended monitoring measures are as follows:

- Mitigation monitoring activities should involve the Project Management Team (Djibouti Livestock Exporters’ Association; the Red Sea Livestock Trade Commission; and, the AU-IBARs’ Pastoral Livelihoods Programme); the Government of Djibouti, Department of Environment; and, the Pastoralist Communities in ensuring that all recommended mitigation measures are implemented, in accordance with the host countries sectoral environmental guidelines (water abstraction rates, soil erosion control, water and sanitation, etc.).
- Project Management Team should establish a monitoring data baseline, reflecting the environmental conditions that existed before the implementation of the project, so that future changes due to the project can be measured, using well selected measurable environmental indicators (vegetation cover, incidence of livestock diseases, soil erosion features, etc.).
- Project Management Team should hold periodical discussion with project managers to ensure that the recommended mitigation measures are implemented, in accordance with the host countries sectoral environmental guidelines (well water abstraction rates, soil erosion control, etc.).
- Project Management Team should undertake periodical field visits to the project area for observations on the assessment of mitigation measures performance, using well selected field indicators (status of well water quality, changes in ground cover, soil erosion occurrence, etc.), and to observe that there are no other unforeseen adverse impacts.

- Project Management Team should ensure that the project performance reports also have a component on the reporting of the project environmental performance, which should be reviewed accordingly for necessary improvement of mitigation measures.
- Project Management Team should ensure that the quality of underground water is closely monitored to prevent possible pollution (contamination) by livestock waste and seawater incursion due to increased water abstraction rates.
- Project Management Team should ensure that human health and safety (H&S) measures are in place and well observed, for ensuring proper storage, handling and application of chemicals (using gloves and proper clothing) for control of ecto-parasites, and safe disposal of empty chemical containers.
- REDSO should provide periodical support to the Project Management Team in ensuring that the issues of project environmental compliance and preparation of the necessary environmental documentation is done in accordance with Regulation 22 CFR 216 and ADS 204 requirements.

References Cited

Dennis Herlocker, (1999). Rangeland Resources in Africa: Their Ecology and Development.

The East African Newspaper of August 11th – 17th, 2003; No. 458. Published Weekly by the Nation Group. Page 4; Article on, “Jemps Want Shrub in Baringo Eradicated”.

Government of Djibouti, (2002). Department of Environment, Environmental Law.

Technical Paper No. 18, (June 1996). Environmental Guidelines for Small-Scale Activities in Africa. SD Publication Series, Office of Sustainable Development Bureau for Africa.