

SOMALIA

CENTRAL RANGELANDS DEVELOPMENT PROJECT

I. BACKGROUND

1.01 Somalia is located between latitudes $11^{\circ}30' N$ and $1^{\circ}30' N$ and covers an area of over 637,000 square kilometers. Its surface forms part of two plateaux sloping from the Ethiopian highlands, towards the Indian Ocean in the East, and the Gulf of Aden in the North. Climatically, the country divides into: (i) a Northwest zone with a Mediterranean climate and an annual precipitation of above 400 mm in certain areas; (ii) a Northern and a Central zone with an arid and hot climate and annual precipitation between 50 and 200 mm; and (iii) a Southern zone with a more humid climate and an annual precipitation of up to 600 mm. Two rainy seasons prevail over much of the country, the long or "Gu" rains (March-April to June) and the short or "Der" rains (September-October to December). Rainfall is erratic with respect both to distribution and to timing and a total failure of two or more consecutive rains may be expected in one out of five years. Most of Somalia is consequently classified as arid to semi-arid.

1.02 The population of Somalia is estimated at 3.7 million of which 0.5 million live in major towns. About two-thirds (2.5 million), are pastoralists. The annual human population growth rate is estimated at 2.6%.

1.03 With a per capita GNP of US\$110, Somalia is one of the poorest countries in Africa. On a 3 years average 1975-77, total annual exports were valued at about US\$80 million. Exports of livestock and animal products provided 75-80% of total foreign exchange earnings, the remainder coming mostly from exports of bananas. Banana production and exports have been declining over the last 10 years whereas livestock exports have increased. Somalia's imports are dominated by investment goods and other essentials such as cereals, petroleum and chemical products.

1.04 About 8.2 million ha, or 13% of the land area of Somalia is considered potentially suitable for crop production. Presently, only around 700,000 ha, or 1.1% of the total area, is cultivated. Thirty million ha or 45% is natural rangeland suitable only for extensive livestock production.

II. THE TRADITIONAL LIVESTOCK SUB-SECTOR

A. Resource Base

Rangelands

2.01 Nearly half of the total area of the country is made up of rangelands receiving 50-200 mm of erratic annual rainfall and is described as semi-desert and wooded or bush grassland. It takes an average of 12 ha to produce sufficient forage for one head of cattle or 10 sheep.

2.02 The only possible productive use of these rangelands is to graze livestock. The Somali pastoralists have developed a system of production which minimizes the effects of drought and disease and achieves the best possible grazing by prudent dispersal of their herds. When conditions are favorable, uncontrolled breeding is practiced to build up herd and flock numbers as an insurance against losses in the next drought. In the past movements often led to disputes over grazing land, seizure of livestock and tribal warfare which confined the pastoralists to defensible areas, and limited the size of the herd. The improvement in law and order enforcement has removed this constraint, and long migrations have become common. With grazing being communal, no incentive exists to manage the feed resource and the increase in human and livestock numbers, as a result of advances in disease control now threatens to disrupt production.

2.03 Without the introduction of management of the rangeland and livestock, the forage resource would deteriorate and livestock numbers would decrease so that a lower output of meat and milk would have to be shared by an increasing population. Over the last decades, many interventions to improve the production system have been tried and most of them have failed because they were imposed without proper understanding of the key determinants of production and the cooperation of the pastoralists. Similarly, well intentioned plans to settle pastoralists in order that they may enjoy the benefit of social services have ignored these basic issues. The improvement of the living conditions of the pastoral population and the maintenance of a viable livestock industry depend on the organized utilization of the rangelands, the country's largest natural resource. Flexibility and mobility are pre-requisites to the utilization of areas with low and erratic rainfall and droughts one year in every five. Introduction of range management followed by a gradual allocation of grazing areas to pastoral communities within regions or, where feasible, within districts, would eventually reduce the migration distances and allow a measure of settlement.

Livestock

2.04 No reliable census of the national livestock population exists, but estimates based on the 1975 census indicate that at the peak of the dry season, 15 million sheep and goats, 2.5 million cattle and the same number of camels are found in Somalia.

2.05 Sheep and goats are by far the most important animals numerically and as a tradeable commodity. Camels, although traded and important as a means of transporting loads, have a special significance by virtue of milk production and their ability to survive without water for long periods. They act as a store of wealth in an inflationary situation with limited investment possibilities. A man's prestige and influence is proportionate to the number of camels he owns. The relative importance of each animal type in exports is indicated below.

Average Annual Live Animal Exports
(1966-1976)

<u>Type of Animal</u>	<u>Number ('000 head)</u>	<u>Value (US\$ million)</u>	<u>% of Total by Number</u>	<u>% of Total by Value</u>
Sheep	715	11.0	52	40
Goats	581	9.3	43	33
Cattle	43	3.7	3	13
Camels	27	3.8	2	14
	<u>1,366</u>	<u>27.8</u>	<u>100</u>	<u>100</u>

Source: Statistical Abstracts (unpublished), State Planning Commission.

Forestry

2.06 Trees play an important role in the economy of the rangeland production ecosystem, where they provide fuel, forage and shade and serve as wind breaks reducing wind erosion. Timber is produced only in limited quantities. Somalia is the traditional supplier of frankincense and myrrh, for which present overseas demand exceeds supply.

2.07 Sand dune formation caused by overgrazing, shifting cultivation and subsequent wind erosion of light sandy soils has become a severe problem in the coastal areas. Experimental sand dune stabilization has been carried out by the Forestry Department of the National Range Agency (NRA) under a food for work program assisted by the World Food Program (WFP).

2.08 Charcoal production and scavenging for fuel together with the grazing of the town herd have denuded large areas surrounding towns and villages and have laid them open to erosion. Dust is blown into the towns and creates a health hazard and run off unimpeded by vegetation causes flooding. The Forestry Department has established nurseries and carried out the first woodlot plantings assisted by the WFP.

B. Related Government Institutions

2.09 The highest level of decision making is the Central Committee of the Somali Socialist Revolutionary Party. Decisions on rangeland development are made by vote of the committee or by presidential decree following consultation with the Agricultural and Livestock Committee, the Office of the Party Chairman for Cooperatives and the Water Resources Development Committee. The Minister of Livestock, Forestry and Range reports to the Central Committee. He is also a member of each of the above groups which meet 3-4 times a year to make policy decisions. He interprets policy and makes operational decisions and is supervised by a designated party representative. The Ministry of Livestock, Forestry and Range (MLFR) comprises: (i) the NRA; (ii) the Livestock Development Agency (LDA); (iii) the Veterinary Service; (iv) the Department of Animal Production; and (v) the Institute of Animal Science.

2.10 The National Range Agency (NRA) was established in 1976, as an autonomous agency to design and implement a national range development strategy. NRA is authorized to: (i) plan national range development; (ii) establish grazing and drought reserves; (iii) develop fodder production units; (iv) carry out planned stockwater development; (v) promote organizations for guiding and educating livestock owners; and (vi) map the rangelands and classify rangeland areas. The transfer of the Forestry Department to the NRA in 1977 further made the agency responsible for: (i) creation of forest reserves; (ii) control of usage of disappearing plant species; and (iii) experimentation with forage or other plant species to achieve more efficient utilization. In 1978 the NRA had a budget of So.Sh. 14 million for activities other than those related to the Northern Rangelands Development Project (NRDP) (para. 2.22), which is financed by a loan from the Kuwait Fund. The agency at present employs 300 permanent staff.

2.11 The Livestock Development Agency (LDA) was established in 1966 and is currently responsible for livestock marketing and exports as well as the collection of relevant fees. A National Livestock Marketing Project is being prepared for which Government intends to seek IDA financing.

2.12 The Department of Veterinary Services headed by the Director of Veterinary Services has a staff of 2,500 consisting of 50 graduates, 1,000 diploma - and certificate level technicians and 1,400 vaccinators and junior staff. An internationally recruited technical director is financed under the NRDP. A UNDP supported Serum and Vaccine Institute produces vaccines against Blackquarter, Bovine Pleuropneumonia, Anthrax, Haemorrhagic Septicaemia, Rinderpest and Newcastle Disease. A central diagnostic laboratory is being established as part of the Institute.

2.13 The Department of Animal Production (DAP) is responsible for animal production projects, state farms and extension services related to modern animal production (dairy, feed lots and poultry), whereas field extension services for traditional livestock producers are the responsibility of the NRA with technical support and supervision from the DAP.

2.14 The Water Development Agency (WDA) is an autonomous agency under the Ministry of Mineral and Water Resources (MMWR) responsible for research and development of the national water resource. It has three functional departments for: (i) Drilling; (ii) Engineering; and (iii) Administration. The MMWR is responsible for all water development subject to policy decisions by the National Water Board which consists of the Ministers of MMWR, MLFR and Local Government and Rural Development, as well as the General Managers of WDA and NRA.

2.15 A comprehensive groundwater development project with technical and financial assistance from USAID is to start implementation at the same time as the Project. This would enable WDA to develop and construct water supplies for NRA.

C. Education and Training

2.16 At present training in range management takes place at Burao Range Training School which carries out a two-year training course for range assistants. Government proposes to establish a Range Management Department at the Faculty of Agriculture, Somali University, as well as diploma level training of range technicians at the Livestock and Forestry School being constructed under the Third Education Project.

2.17 A Veterinary Faculty at the National University of Somalia was opened in 1973, and offers a 5-year course in Veterinary Science. It takes in 30 undergraduates each year and the first class graduated in 1978. From 1979, a course in Animal Production will be introduced in the form of a two-year option during the last two years of the veterinary course.

2.18 The Institute of Animal Science which is part of the MLFR at present carries out all training in animal health and production at the technical level. With the start of the Livestock and Range School (para. 2.19) it would revert to training of animal health assistants and laboratory technicians.

2.19 The Agricultural Secondary School at Afgoi has 240 places for agricultural technicians. Government has decided to combine it with the Livestock and Forestry School ^{1/} (para. 2.16) which would have 360 places and to establish a training complex for technician level training in agriculture, animal production, range and forestry.

2.20 The National Adult Education Center is located in Muqdisho and has been operating for several years with assistance from the Federal Republic of Germany. The center is managed by a Somali Director assisted by one German technician/educator. The purpose of the center is to support all non-formal training in Somalia.

^{1/} In the following called: Livestock and Range School.

D. Range Development Projects

2.21 Range development activities were started in 1967 with assistance from the United Nations Development Program (UNDP) culminating in 1974 with the UNDP/FAO Rangeland Conservation and Development Project which has had as its objectives: to establish a range management service; to experiment with soil and water conservation and forage production; and to investigate means of increasing livestock productivity and off-take. The project was prematurely terminated in 1976 due to the UNDP financial crisis, but its findings influenced the design of the NRDP as well as the proposed Project considerably.

2.22 The Northern Rangelands Development Project was identified, prepared and appraised in 1976 by IDA as part of the Drought Rehabilitation Emergency Program and was subsequently financed by the Kuwait Fund. Implementation started in January 1977. The project area comprises the 140,000 km² of the three regions of Tugdeer, Nugal and Sanaag in northern Somalia. The project objectives are to arrest the deterioration of the rangelands. It is designed to establish grazing and famine reserves and fodder production units based on water spreading and water harvesting and to carry out stockwater development. It will further initiate non-formal education at all levels in order to create a dialogue with the pastoralists, and expand the Range Training School at Burao and veterinary services in the project area.

2.23 NRDP's implementation has suffered from the premature termination of the UNDP/FAO project as well as from a considerable delay in the recruitment of international staff. The Somali project staff has endeavored to break these constraints and has succeeded in some training of staff and in establishing an effective dialogue with the pastoralists.

2.24 The NRA is executing the World Food Program (WFP) Project (SOM 719) which supports reforestation and rangeland development activities through the provision of food for work rations to laborers employed. A three year extension and expansion of the project (1979-81) comprising US\$19 million worth of commodities was approved by the WFP in November 1978.

E. Grazing Cooperatives and Grazing Associations

2.25 Formation of grazing cooperatives in Northern Somalia began in 1974, under the sponsorship of the MLFR. In 1976, responsibility for supervision of rangeland cooperatives was transferred to the NRA and as of January 1978, 12 had been approved and were in various stages of establishment and 12 additional applications were under consideration. The majority of the established cooperatives are in Sanaag Region where grazing normally only requires short migrations. The average membership of each cooperative is 70 and the average land allocation is 16,000 ha of which a maximum of 10% may be cultivated. Emphasis is put on soil and water conservation and forage production under water spreading or water harvesting. The Range Law of 1979 provides for the legal aspects of the grazing cooperative (para. 5.04).

2.26 Government at present prefers grazing cooperatives to alternative types of land tenure reform. Any type of reform in the pastoral areas, however, faces similar problems of achieving equity in land adjudication while maintaining the flexibility and mobility demanded by climatic conditions. In Northern Somalia, an average of 230 ha of grazing land is available per family. Eight out of the 12 existing cooperatives have access to more than 300 ha per family and the range is generally of higher than average carrying capacity. Furthermore, a cooperative retains the traditional right to graze common land in a drought emergency. Thus, a general program of rangeland enclosure by cooperatives on such favorable terms would soon have adverse effects on the livelihood of non-members and, eventually, would exclude large numbers of pastoralists from access to grazing.

2.27 The concept of the grazing association as a representative body of the pastoralists grazing a particular area has been gradually developed in Somalia over the past 30 years. The association fits well into the system of village and district councils and allows for the representation of seasonal graziers from outside the district. Since members of an association are elders who enjoy the respect of their community they play an important part in the dialogue with the local administration.

2.28 Before the 1973 drought, about 17 associations had been established and there are now 34. The members of the association are elected by their respective communities and are responsible for: (i) mediating between the authorities and the graziers; (ii) helping with the demarcation of grazing reserves; and (iii) ensuring that grazing regulations, once accepted, are respected.

2.29 It is intended that the associations, as a result of the non-formal training program would be able to guard their range reserves under the continued supervision of the NRA district range assistants. Over a period of 20 - 30 years a certain number of reserves would be allocated to groups of grazing associations, whenever possible, in their own districts. In this manner, migrations would be shortened and a more sedentary way of life would become possible.

F. Ongoing Bank Group Assistance

2.30 Bank Group assistance to the agricultural sector in Somalia started with the Trans-Juba Livestock Project (IDA Credit 462-SO) in FY74 followed by two credits in FY76: the Drought Rehabilitation Project (IDA Credit 623-SO) and the Northwest Region Agricultural Development Project (IDA Credit 635-SO). The latter project has been delayed because of the security situation in North-West Somalia. The Drought Rehabilitation Project is slowly being implemented. In the Trans-Juba Livestock Project stock routes and ranch development have made good progress but borehole drilling is behind schedule. An Agricultural Extension and Farm Management Training Project has been negotiated and a Bay Region Agricultural Development Project has been appraised.

Government has requested Bank assistance for the preparation of a Live-
Marketing Project which would be an important backup activity for the
Livestock Project, the NRDP, as well as for the proposed Project.

Experience with ongoing projects reflects the overall absorptive
and the scarcity of trained manpower which are creating implemen-
constraints. In order to overcome these constraints the proposed
includes a large contingent of internationally recruited technical
staff of whom three would be technically responsible for the
day running of key departments in the NRA. Government has further
Bank assistance for the establishment of a Project Implementation
the State Planning Commission.

III. THE PROJECT AREA

A. Description

Location and Size

The project area is located between latitudes 3°10'N and 7°40'N
bordered to the East by the Indian Ocean and to the West by the de
border with Ethiopia. It covers 149,000 km² and comprises the three
administrative regions of Hiiran, Galgudud and Mudug. The seats of local
government are in the regional capitals of Beletwein, Dusa Mahreb and Galkayo.

According to the 1975 (unpublished) census, the total human popu-
lation in the project area was 543,700 of whom 75%, (400,000), are believed
directly involved in livestock production. The livestock population
estimated at 1.2 million sheep, 3.9 million goats, 0.9 million cattle, and
1.0 million camels. Seasonal fluctuations in numbers preclude accurate esti-
mates. Moreover, large numbers enter the Project area during the dry season
from the Ogaden, but no distinction is possible as owners are Somali and
relatives of the inhabitants. Most people in towns and villages keep
livestock either in adjoining rangeland or on a transhumant basis. The
number of livestock per person is estimated at 1.9 camels; 1.7 cattle;
1.2 sheep and 8.0 goats. 1/

Vegetation and Soils

The only natural resources in the area are the range vegetation and
population of game, mostly antelopes and gazelles. The vegetation varies
from scrub to topography and rainfall which ranges from about 100 mm in the
north to about 250 mm in the south near Bullo Burti. In Galgudud and
regions, the soils are mostly sand over limestone at variable depths.
In the south, the soils while being mostly sandy are also influenced by the
Juba River floodplain in the extreme south.

1/ of Average Herd Size (Mudug, 1971).

Rangeland Systems

3.04 The vast Haud plain extends into, and occupies about one-fifth of, the Project area in a broad band some 50 to 100 km wide. The carrying capacity ranges from 7 to 20 ha per Livestock Unit (LU) ^{1/}. It constitutes, together with the Hobyo plains (para. 3.07), the best grazing country in the Project area.

3.05 The southern part of the Hiiran region is characterized by an extensive belt of low undulating hills. Limestone uplands with a relief of up to 200-150 meters carry a rich shrub and tree cover over relatively sparse grasses. The carrying capacity is estimated at 8 ha per LU.

3.06 In the extreme south of the Project area, the Shebelli River has deposited an extensive floodplain, characterized by deep, greybrown clays. The area is severely overused and erosion by wind and water is prevalent but observations of an enclosed area at Far Libaax indicate that it would be possible for it to recover if brought under controlled grazing.

3.07 The Hobyo plains extend as a 15-20 km wide band along the coast separated from the Haud by elevated plains of orange sands on limestone. Soils are greyish, very coarse sands over limestone and the limestone outcrops infrequently in low ridges. The grass component is rich and, even where heavily grazed, the grass cover does not appear to have altered floristically. Moving sand dunes are a potential hazard to stability and serve as an indication of the effect which severe overuse may cause in this environment. Carrying capacity is estimated to be from 8 to 12 ha per LU.

3.08 The central part of the Project area, comprising somewhat less than half of the total, is a vast tract of orange and pink toned sands overlying limestone at variable depth. It rises in a series of benches from the Hobyo plains and finally merges with the Haud in the west. Ridges up to 50 m high are common, with valleys up to 5 km across to the next bench system. Shallow sands over limestone occur freely. In many instances, the shrub height does not exceed 1 m and the foliar cover is less than 5 percent but where the soil is deeper it supports a much denser grass cover. A carrying capacity of 15 ha per LU serves as an indication of an average of good and poor areas.

3.09 The gypseous areas are characterized by clay soils interspersed with slightly higher stony areas and appear to be the remnants of a much larger and more active drainage system of the past. Calcareous deposits resulting from the reduced drainage are frequent and some rise to about 20 m above the surface. Near Galkayo, Dusa Mahreb and Ceel Bur, the gypseous tracts are only a few kilometers wide and meander through other vegetation types. The gypseous areas have a high potential for sheep, goats and camels due to their

^{1/} Carrying capacities are expressed in the number of ha which would carry 1 Livestock Unit (LU). A mature cow or steer weighing 250 kg is taken as 1 LU. A camel is 1.2 and a sheep/goat is 0.1 LU.

easily accessible water supplies. They are overgrazed but have the capacity to recover. In good condition their carrying capacity would be in the vicinity of 6 ha per LU or better.

Hydrogeology

3.10 The geology of the Central Rangelands area is a simple country rock environment containing two separate alluvial systems. The alluvials have a maximum thickness of from 100 to 150 m and consist of surficial gypsum and calcretes overlying clays, clayey sands and clean, coarse, rounded sands. Downstream from the main fault system, the area is covered with drift sands, dunes and deep red soils. There are two aquifer systems: an aquifer in the deeper sandstones, limestones and marls; and a shallow aquifer in the alluvials, the shallow gypsum beds and calcretes marginal to the drainage lines. The deeper or lower aquifer occurs from 150 to 200 m in the elevated inland regions and from 100 m in the lower central and coastal areas. It probably recharges in the Ogaden and underflows east towards the Indian Ocean. Throughout the area, all waters drawn from selected sites should be suitable for stock, and boreholes, with minor local adjustments, should produce good water, although the shallower ones may be high in sulphates.

B. Resource Utilization

3.11 The current rangeland utilization in the area involves a more or less continuous use of the rangeland for as long as water supplies remain available in the area. There are no accepted stocking rates and no agreed maximum stock number for any part of the Project area. Due to the increasing livestock population and shortage of stockwater points, pastoralists are compelled to compete with one another for the available forage with little regard to the needs of the vegetation for rest. It is not surprising therefore that areas around existing water points are severely overgrazed and there is no reservation of standing pasture to meet their needs during the recurrent droughts.

Social Organization

3.12 The primary social unit is a family household comprising typically a mother, her children, and, when he is free of other commitments, the father. This group shares its meals together and shelters in small huts made of flexible poles and mats. The next significant social unit is the kinship group living and travelling together. The pastoralists in the Project area belong to several lineage groups which until recently, determined social and contractual relationships. Quite apart from increasing government influence, the need for constant movement of nomads among dwindling grazing resources is seriously challenging traditional affiliations, and it is becoming less relevant to view pastoralist behavior entirely in the framework of culture.

Seasonal Migration

3.13 Somali pastoralists are predominantly transhumant in that they move from their home village, after the dry season, in search of water and grazing. Movement in the Project area is mainly on an eastwest axis and ranges from coastal areas to as far west as the Haud and parts of the neighboring Ogaden. Pastoralists using the eastern part of the Haud migrate eastwards into the central tracts of Mudug and Galgudud regions in the rainy seasons and return westwards to the Haud in the dry season. Pastoralists who normally rely on coastal water points during the dry season, usually range westwards into the same central tracts in the rainy season. Thus, the existence of these presently waterless central tracts plays an important role in shaping migratory movements.

3.14 With fresh green browse, camels can go for 6 - 8 weeks without water. Their herders - young unmarried men and older boys - subsist on camels' milk and require little or no water. Goats, sheep and especially cattle survive less successfully without water, and their movements tend to be more limited. The dependence of animals on water increases in the short dry season (August - October), and reaches critical importance in the long dry season (December - April). Movement is therefore restricted by the scarcity of wells since cattle and sheep are usually grazed within 5 km of a dry season water point whereas goats and milking camels may be herded together up to 20 km away. The dry camels plus a small number of milking camels may be grazed 70 km or more away.

C. Infrastructure

Communications

3.15 A new 1,045 km bitumen road (Burao - Beletwein) connects the regional capitals and provides easy access to Northern Somalia. Beletwein is similarly connected with Muqdisho by hard surface road. Access to district capitals is by tracks or cut lines. During the rains, parts become impassable through flooding and mud and during the dry season parts are impassable because of sand. The cost of vehicle operation is very high. Hobyo, the only port in the area, has no facilities for handling dhows or larger ships.

Services

3.16 Livestock is marketed mainly by private traders and with the exception of supplies to domestic markets and the abattoirs at Kismayo and Muqdisho, the trade is dominated by live animal exports through Berbera port to Saudi Arabia. The marketing system operates fairly efficiently, and the construction of the hard surface roads from Beletwein to Burao and from Hargeisa to Burao has made transport of livestock by lorry more common. LDA provides only limited marketing facilities and services and mostly acts as a fee collecting agency.

3.17 Veterinary Services are established in each of the regions and include a mobile vaccination team dealing with contagious diseases, and a number of small dispensaries sited near wells where drugs and dipping chemicals are available to stock owners. The service is constrained by shortage of transport and therefore limited to vaccination at major accessible watering points, the investigation of large scale disease outbreaks and the sale of drugs and chemicals. Due to the large area to be covered, additional manpower, equipment and transport is needed to reduce present high mortalities as well as to increase livestock off-take.

Local Government

3.18 Public management has been decentralized in order to mobilize human and material resources at the local level. Communities are involved in planning and execution of development within the overall national plan. The three regions of the Project area are subdivided in 12 districts and within each district into villages (sub-districts). At each level, councils are established. In the case of village councils, the 7 members are elected annually by the permanent residents of the village. The Chairmen of the regional and district councils are the representatives of central government, and are responsible for good management and political, social and economic development. Although councils must clearly operate within overall national policy, their authority, responsibilities and initiatives are extensive.

3.19 National projects are both planned and implemented in consultation with local authorities. Staff of central ministries and agencies working in local areas combine accountability to local councils with technical supervision from the parent ministry. Service of their representatives on each council involves the pastoral communities in the planning and implementation of development and enhances the prospect of their cooperation.

D. Assistance Beyond the Project Area

3.20 The technical assistance which would be provided by the Project to the NRA headquarters in the form of the technical directors of Administration, Range and Environment and Forestry and the technical officer of the Water Service would also support NRA's ability to carry out activities beyond the Project area. This would initially be confined to: (i) strengthening NRA's ability to execute the NRDP (para. 2.22), the WFP Project 719 (para. 2.24); and (ii) the formulation of a forestry development project.

3.21 In addition, direct support for the ongoing NRDP would be provided through: (i) an aerial resource inventory survey similar to that proposed under the Project; and (ii) the services of the hydrogeologist and drilling foreman, and equipment for the drilling of the 10 boreholes included in the NRDP.

IV. THE PROJECT

A. Project Design

Project Formulation

4.01 The Government of Somalia is committed to the improvement of the national rangelands, and the standard of living of the pastoralist communities. It intends to: (i) improve the resource base of the traditional livestock industry through range management; (ii) alleviate the constraints on livestock productivity by providing better veterinary services; and (iii) achieve a gradual concentration of pastoral communities so that their standard of living may be improved through the provision of health services and education.

4.02 The Project is designed to assist Government in achieving this goal by: (i) stabilizing rangeland and livestock productivity through the introduction of range management, livestock water supplies and improved veterinary services; (ii) gaining the confidence and cooperation of the pastoralists by establishing a dialogue with them through non-formal training; and (iii) strengthening NRA's ability to implement range development by training staff at all levels and providing senior technical staff for the departments of administration, range and environment and forestry.

4.03 The UNDP/FAO Livestock Development Survey in 1966 was followed in 1970 by a survey of the Northern Rangelands (UNDP SOM/70/512) and in 1974 by the UNDP/FAO Rangeland Conservation and Development Project. In 1976, Government decided to establish the NRA as part of the NRDP with the initial task of implementing that project. In November 1976, a World Bank project identification mission visited Somalia at Government's request and it was agreed that a project should be prepared to develop the Central Rangelands area of the country. In January 1977, a joint Government/World Bank team began project preparation. The preparation report was issued in October 1977 and Government's request for appraisal followed in November. The Project was appraised in February 1978 and negotiated in March 1979.

4.04 The main changes made in the project design at appraisal were: (i) the concept of range management by the opening and closing of boreholes evenly distributed throughout the Project area was abandoned in favor of demarcation of grazing reserves covering 30% of the area and the development of stock water in selected reserves; (ii) the proposed Range Research Institute which was considered premature, was deleted; (iii) non-formal and formal training was considerably expanded; and (iv) the woodlot planting component was replaced by 3 nurseries and town shelter belts.

Project Description

4.05 The Project would, over a period of six years, consolidate and improve rangeland and livestock production in the Project area, improve the income of the pastoralists and through the introduction of a system of range utilization, make way for the gradual concentration of pastoral communities, conducive to the provision of social services.

4.06 This would be achieved by conducting an aerial survey of livestock and human habitation in the Project area on the basis of which a vegetation map would be produced, followed by a ground survey of the rangelands and visits to pastoral communities to gather more detailed information and establish a dialogue. Based on this information the location of grazing reserves would be chosen, grazing associations formed and agreements reached between NRA, local government and the grazing associations regarding the use of the reserves, especially those where stock water supplies would be developed. In the meantime non-formal training of pastoralists and the formal education of staff would be implemented as would the strengthening of NRA and veterinary services and the establishment of nurseries, town shelter belts, soil and water conservation areas and range grazing cooperatives.

4.07 Range Development. Specifically, the Project would provide staff, equipment and transport to carry out range development comprising:

- (i) the demarcation of 45 town and village grazing reserves each of 400 km², 12 famine reserves each of 600 km² and 20 range grazing reserves each of 900 km²;
- (ii) the drilling and equipping of 32 boreholes, or stockwater ponds where appropriate, to provide supervised stockwater points in the famine and range grazing reserves;
- (iii) the construction of 1,000 km of access tracks leading to range reserves and stockwater points;
- (iv) the provision of staff, housing, offices, workshops, transport and equipment for the NRA field service in the Project area.

4.08 Training. In order to gain the confidence and cooperation of the pastoralist, the Project would provide staff, equipment and transport for a non-formal training program to:

- (i) carry out a survey of pastoral communities and initiate a dialogue regarding the Project while collecting information on seasonal movements and grazing;
- (ii) continue this dialogue by non-formal education regarding the objectives of the Project and the formation of grazing associations;
- (iii) produce simple educational materials directed at the pastoralists and a film dealing with the pastoral way of life which would explain the purpose of the Project;
- (iv) support the build-up phase of the training program by 3 man-months of consultant services;

- (v) field training in the form of short courses and seminars for the upgrading of field staff and for the initial on-the-job training of range assistants.

4.09 To assist the NRA in overcoming the shortage of staff trained in range management at both the technical and professional levels, the Project would provide:

- (i) 4 lecturers for training courses in animal production, range and forestry at the technical level at the Livestock and Range School at Afgoi;
- (ii) one university lecturer in range management as well as transport and miscellaneous equipment to support a professional level course in range management at the Faculty of Agriculture at Afgoi;
- (iii) 20 man-years of fellowships for overseas post-graduate training in range management;
- (iv) overseas on-the-job training of counterpart staff for the range monitoring team.

4.10 Rangeland Studies and Trials. In order to assist the NRA in the collection of basic data on range productivity and the formulation of a range research program the Project would provide:

- (i) 5 man-years of professional services, equipment, transport and housing for the establishment of range reference areas to observe the effects of grazing systems, range improvement experiments (firing, bush clearing) and a small laboratory for forage analysis;
- (ii) 3 1/2 man-years of professional services to continue the identification and registration of range vegetation (taxonomy);
- (iii) funding for aerial survey and vegetation mapping of the Tugdeer, Nugal and Sanaag regions in Northern Somalia.

4.11 In order to demonstrate soil and water conservation measures and to assist in experimentation with and the evaluation of grazing cooperatives, the Project would provide 4 man-years of professional services, with equipment, transport and housing.

4.12 In order to strengthen the NRA Forestry Department, and to demonstrate to the population in the regional capitals of the Project area the usefulness of town shelter belts, the Project would provide:

- (i) 4 man-years of professional services for the technical management of the Department and training of its staff;

- (ii) 4 man-years of professional services with equipment, transport and housing for the establishment of three nurseries and three town shelter belts each covering 10 km².

4.13 Veterinary Services. In order to improve the veterinary service in the Project area and to strengthen the capacity of diagnostic services of the Serum and Vaccine Laboratory to support disease investigations and control in the field, the Project would provide 16 man-years of professional services, with equipment, transport and housing. Six mobile vaccination teams and 12 mobile clinics, offering treatment and selling veterinary drugs and chemicals, would be added to the existing service in the Project area and would enable the service to be provided throughout the year by moving seasonally with the flocks and herds.

4.14 NRA Headquarters. The NRA is presently implementing NRDP, establishing 16 regional offices, supervising the stock water reservoirs in the interriverine area and has also been given responsibility for forestry and wildlife activities. This has put a great strain on the three-year old institution. Staff, both in administrative and technical fields, are not sufficiently qualified and lack experience. To ensure that both the Project and the ongoing development activities get the benefit of strong headquarter support and direction the Project would provide:

- (i) 15 1/2 man-years of professional services, with transport and housing;
- (ii) 4 man-years of professional services, with transport and housing for the establishment of a range monitoring unit which would conduct continuous monitoring of the range reserves under the Project to form the basis for management decisions regarding the opening or closing of grazing areas;
- (iii) 6 1/2 man-years of professional services, with housing, a borehole drilling rig and equipment, and transport for the new stock water service to develop, operate and maintain stock water supplies;
- (iv) funds for the construction of a headquarters office building;
- (v) 4 man-years of professional services, workshop buildings, equipment, transport and housing for the establishment of one central maintenance workshop in Muqdisho and three regional small workshops to ensure the maintenance of vehicles, water pumps and engines.

4.15 World Food Program (WFP) Assistance. All unskilled labor required for range development and rangeland studies and trials would be provided under the WFP Project until 1981 (para. 2.24). In case the WFP Project would not be further extended, Government would provide wages for unskilled labor. A total of 4,700 man-years of labor would be provided for surveying and demarcating range reserves, the establishment of town shelter belts and nurseries, soil conservation and water spreading and experimental grazing cooperatives.

Detailed Features

4.16 A Resource Inventory would be carried out consisting of two aerial surveys, undertaken in different seasons, and the production of a vegetation resource map (scale 1:200,000) as well as acetate transparencies. It would include a description of land systems in terms of geology, soils and vegetation as well as information on human population and habitation, domestic animals, water points, wild animals by species, and cropping activities.

4.17 A Range Ground Survey would be conducted, based on the resource inventory, by a ground survey team consisting of two internationally recruited range ecologists and one Somali professional. The survey would: (i) verify and validate the resource inventory (para. 4.16); (ii) establish range condition guides and condition standards; (iii) identify areas of high erodibility and areas suitable for village, town, famine and range grazing reserves, especially those suitable for stockwater development; and (iv) locate access tracks. In the selection of reserves, the survey team would liaise with the non-formal education team, conducting the community survey and non-formal training to confirm the agreement of the pastoralists to the proposed sites. Ninety hours of aircraft hire would be provided to allow for overflights of areas not traversed by the team.

4.18 Following the range ground survey, a Range Monitoring Unit would be established consisting of two internationally recruited range ecologists and three Somali professionals. The purpose of range monitoring would be to establish, by repeated field observations of selected monitoring sites, a record of the condition of the range vegetation as a basis for management planning. In all, 284 monitoring sites would be established. The expatriate team would complete the work in 18 months but would return during the last six months of the Project to give refresher training and assist in the interpretation of the observations collected in the intervening period.

4.19 30% of the rangelands in the Project area would be put under controlled grazing in the form of surveyed, monitored and guarded grazing reserves. A grazing association would be formed for each reserve prior to its establishment in order to involve pastoralists in management from the outset. The grazing associations would be trained to take over responsibility for the reserves under the supervision and direction of NRA field staff after a period of approximately 10 years.

4.20 Forty-five Town and Village Grazing Reserves each of 400 km², about 4 reserves per district, would be established. Each year, one fourth of each reserve would be closed for grazing. The period of rest would be one or two years determined by the monitoring of range condition. The non-formal education and community survey team would solicit the cooperation of the pastoralists, assist in the formation of grazing associations and provide training in the range management system to be practiced.

4.21 20 Range Grazing Reserves each covering 900 km² would be established around water points selected by the hydrogeologist in an area designated by the survey team as being suitable and safe for stockwater development, and each demarcated quarter of 225 km² would be rested in turn in similar fashion to the village and town grazing reserves. The installation of water points in the range grazing reserves would extend the grazing period by 4 months. However, in order to avoid overgrazing, this would be conditional upon grazing associations being formed by the pastoralists habitually using these areas, and their agreement, if necessary, to limit the numbers of animals they would graze around a new watering point and to follow the range management directives of the NRA. The non-formal education team would identify groups and individuals who could conveniently form a grazing association. The range reserve would initially be policed by 20 guards.

4.22 In each of the twelve districts, one famine grazing reserve of 600 km² would be established and equipped with a borehole designed to supply the maximum quantity of water during periods of use. The reserves would be selected by the survey team in consultation with the regional range officers and the pastoralists. They would be opened for grazing in times of drought or as required for the purpose of bush control.

4.23 The total distance to be surveyed and demarcated to establish the boundaries and sub-divisions of the reserves would be 10,200 km. It is assumed that 5,100 km would be cleared by bulldozers and motor graders. The dozers would "pioneer" the demarcation lines where the bush was particularly heavy. The motor graders would finish those demarcation lines serving as roads and construct others where the bush vegetation was light. The 5,100 km assumed to be too rocky for the machinery would have cairns erected by crews of laborers directed by the surveyor.

4.24 Non-formal Training. The success of the Project would depend on the participation of the pastoralists affected by the proposed interventions. The reversal of range deterioration does not present a technological problem. The problem is human, namely to arrive at a consensus which subjects the short term ambitions of the livestock owner to long term development objectives. The alternative to force in the form of police type actions is a non-formal education dialogue which provides a slower but more enduring change.

4.25 The Project would provide 9 man-years of professional services, with equipment, transport and housing for field staff, to conduct a community survey of all pastoral communities in the area; train 15 regional and district range educators; conduct seminars and workshops with the pastoral elders and government officials; produce simple educational materials, radio programs and a film about pastoral livestock production - all aimed at explaining the purpose of range development and the promotion of the understanding and participation of the pastoralists.

4.26 The first step would be visits to all pastoral communities in the Project area by a Somali team headed by the Pastoral Training Adviser seconded from the Academy of Somali Studies. The team would establish a dialogue and in the process collect information regarding the population and seasonal movements of the livestock, thus preparing the way for negotiations with the NRA range staff on the formation of grazing associations and the establishment of grazing reserves. The team would liaise closely with the regional range service and the range ground survey team.

4.27 The internationally recruited Adult Education Officer and counterpart staff would establish the NRA Audio-Visual Center in Muqdisho in collaboration with the National Adult Education Center of the Ministry of Education. They would use the training support equipment, train the audio-visual technicians and other staff and develop a program of writing, printing and taping of material to be used by the project field trainers. Radio programs would be prepared in cooperation with Radio Somalia and an educational film would be produced with the assistance of the Somali Film Agency. The center would also support the field training programs of the Livestock and Range School and the Range Department at the University.

4.28 The internationally recruited Range Training Officer would, together with his Somali counterpart, provide on-the-job training and support for the community survey team, regional range education officers and the district range educators. They would organize short staff training courses and pastoralists' seminars, and assist in field training programs which would be part of the formal range-training curriculum. They would work closely with the Pastoral Training Adviser and would liaise with the nomadic training centers of MOE at Awooney and Gur El.

4.29 Range education officers located at each of the three regional headquarters as well as one range educator per district would be provided. The latter would be pastoralists from the district who had some previous education and training in a responsible government job or similar activity.

4.30 Formal Training. In order to alleviate the acute shortage of NRA staff trained in range management, the Project would provide 21 1/2 man years of professional services, equipment, transport, educational material and staff housing in support of the Livestock and Range School at Afgoi; the establishment of a Range Management Department at the Faculty of Agriculture of the National University of Somalia; and overseas post-graduate training.

4.31 The Project would provide four internationally recruited lecturers: in Range Management (two); in Animal Husbandry (one); in Forestry (one); as well as transport, housing and equipment needed for classroom and field training. The lecturers would be recruited in time to prepare the course curricula and field training program, together with their Somali colleagues. Similarly, the Project would provide an instructor in range management, transport, housing and training equipment for the Faculty of Agriculture as well as 20 man-years of post-graduate fellowships in range management. An additional 20 man-years of fellowships would be financed by USAID under a Regional Man-power Development Program.

- 4.32 Range Investigations. In order to overcome the lack of basic data on the rangeland resource of Somalia and to build a research program on the basis of the information provided by aerial and ground surveys, the Project would provide 8 1/2 man-years of professional services, equipment, staff housing and transport to establish 92 range reference areas in various ecological zones of the Project area; the registration and chemical analyses of forage species, and trials regarding the effect of firing and bush-clearing.
- 4.33 A Resource Inventory similar to the one carried out for the Project area (para. 4.16), would be carried out in the Tugdeer, Sanaag and Nugal regions (NRDP area).
- 4.34 To increase the knowledge of what may be gained by applying soil conservation and water spreading techniques in the Project area, two man-years of professional services, equipment and transport would be provided to design and execute trials in Far Libax, Roux and a third location to be selected, as well as to demonstrate anti-erosion activities in other parts of the Project area as required.
- 4.35 In the above mentioned three locations the Project would also support three experimental grazing cooperatives by providing 2 man-years of professional advice and training. The cooperative adviser, together with his counterpart, would undertake an in-depth evaluation of existing grazing cooperatives and make recommendations to Government regarding their viability, and would assist the three experimental cooperatives in the Project area with respect to collective buying, marketing and improvement of living conditions through provision of health and education services.
- 4.36 An internationally recruited Technical Director of Forestry would be provided for a period of four years to be responsible for the technical aspects of forest evaluation and administration, and to advise the General Manager of the NRA with respect to the operation of the Forestry Department. He would participate in the training of forest guards and forest officers in cooperation with the forestry lecturer appointed to the Agricultural Secondary School of Afgoi, and supervise the establishment of the town shelter belts and nurseries.
- 4.37 Towards the end of his assignment he would submit a plan for the implementation of a forestry program for the country and assist the NRA in drawing up a relevant Project for submission to aid agencies.
- 4.38 At each of the three regional capitals - Galkayo, Dusa Mahreb and Beletwein - the Project would provide fencing, tools, equipment and labor for the establishment of a 10 km² large town shelter belt and a tree and forage plant nursery as well as the services of a nursery specialist for four years.
- 4.39 Veterinary Services. At the national level technical assistance would be provided in the form of three internationally recruited veterinary specialists: a Senior Pathologist, a Disease Investigation Officer for the

Vaccine and Serum Institute in Muqdisho and a Laboratory Technician. They would: (i) organize a central diagnostic unit; (ii) establish guidelines for the collection and dispatch of diagnostic material by the regional field services; (iii) conduct a national disease survey; (iv) monitor vaccination campaigns; and (v) train their counterparts and the technical staff on the job. To strengthen the regional field services, the existing post of Technical Director of Veterinary Services, presently financed under NRDP, would be extended for four years. The specialist holding this post would be responsible for: (i) organizing and supervising the development of the field services in the project area; (ii) advising the Director of Veterinary Services on all aspects of the national field service; (iii) training his counterpart and the regional veterinary officers; (iv) improving the efficiency of the field diagnostic service in cooperation with the officers of the central diagnostic unit; and (v) paying special attention to the cost effectiveness and manpower needs of the veterinary service.

4.40 In the Project area the physical facilities of the field service would be improved by the construction of a simple field diagnostic laboratory at Beletwein. Vehicles and equipment would be provided for six additional mobile vaccination teams and 12 mobile clinics which would follow the seasonal movements of livestock and offer services including dipping of small stock and sale of veterinary drugs and chemicals throughout the year. Funds would be provided for incremental staff, radio communication, postgraduate overseas training of one veterinary officer, as well as for the establishment of a revolving fund for veterinary drugs and chemicals.

B. Project Costs

4.41 Total Project Costs, including contingencies, are estimated at US\$46.3 million, of which about US\$32.7 million or about 71% would represent foreign exchange requirements, as summarized overleaf:

	<u>Local</u>	<u>Foreign</u>	<u>Total</u>	<u>Local</u>	<u>Foreign</u>	<u>Total</u>	<u>Foreign</u>
	<u>---So.</u>	<u>Sh.</u>	<u>Million---</u>	<u>-----US\$</u>	<u>Million-----</u>		<u>Exchange</u>
							<u>Percent</u>
<u>Range Development</u>							
Resource Inventory	-	1.3	1.3	-	0.2	0.2	100
Range Ground Survey	0.3	2.5	2.8	0.1	0.4	0.5	91
Range Grazing Reserves	9.5	26.0	35.5	1.5	4.1	5.6	73
Water Development	1.6	4.4	6.0	0.3	0.7	1.0	74
NRA Field Support	<u>19.7</u>	<u>14.4</u>	<u>34.1</u>	<u>3.1</u>	<u>2.3</u>	<u>5.4</u>	<u>42</u>
Sub-Total	31.1	48.6	79.7	5.0	7.7	12.7	61
<u>Training</u>							
Non-formal Training	9.9	15.1	25.0	1.6	2.4	4.0	60
Formal Training	<u>1.2</u>	<u>15.6</u>	<u>16.8</u>	<u>0.2</u>	<u>2.5</u>	<u>2.7</u>	<u>93</u>
Sub-Total	11.1	30.7	41.8	1.8	4.9	6.7	73
<u>Range Studies & Trials</u>							
Northern Rangelands Inventory	-	1.3	1.3	-	0.2	0.2	100
Town Shelter Belts & Nurseries	1.2	5.0	6.2	0.2	0.8	1.0	81
Range Investigations	0.5	6.5	7.0	0.1	1.0	1.1	92
Soil Conservation, Water Spreading & Grazing Cooperatives	<u>1.0</u>	<u>5.6</u>	<u>6.6</u>	<u>0.1</u>	<u>0.9</u>	<u>1.0</u>	<u>86</u>
Sub-Total	2.7	18.4	21.1	0.4	2.9	3.3	87
<u>Veterinary Services</u>	<u>4.7</u>	<u>15.3</u>	<u>20.0</u>	<u>0.8</u>	<u>2.4</u>	<u>3.2</u>	<u>76</u>
<u>NRA Headquarters</u>							
Administration & Management	3.4	17.2	20.6	0.6	2.7	3.3	83
Range Monitoring Unit	1.2	3.9	5.1	0.2	0.6	0.8	77
Water Services	3.3	14.4	17.7	0.5	2.3	2.8	81
Maintenance Service	<u>2.0</u>	<u>2.8</u>	<u>4.8</u>	<u>0.2</u>	<u>0.5</u>	<u>0.7</u>	<u>58</u>
Sub-Total	9.9	38.3	48.2	1.5	6.1	7.6	79
Base Cost	59.5	151.3	210.8	9.5	24.0	33.5	72
Physical Contingency	4.5	11.3	15.8	0.7	1.8	2.5	72
Price Contingency	<u>21.5</u>	<u>43.4</u>	<u>64.9</u>	<u>3.4</u>	<u>6.9</u>	<u>10.3</u>	<u>67</u>
TOTAL PROJECT COST	<u>85.5</u>	<u>206.0</u>	<u>291.5</u>	<u>13.6</u>	<u>32.7</u>	<u>46.3</u>	<u>71</u>

4.42 The table in para 4.44 summarizes the cost categories including all contingencies.

4.43 Costs have been estimated at January, 1979 prices, and are based on procurement contracts and quotations received by project agencies in Somalia at the time of appraisal. The annual unit cost for Technical Assistance staff has been calculated at US\$100,000 for U.S. staff, US\$50,000 for British staff, and US\$80,000 for all other internationally recruited staff. The cost of consultant services has been estimated at US\$6,000 per month. Local salaries and allowances reflect those paid by NRA in the NRDP and include estimated income taxes. Construction costs have been varied according to the distance from Muqdisho. Foreign procurement, fuel and professional services are duty free in accordance with Government regulations for development projects. A physical contingency, amounting to 7.5% on an average, has been included to reflect the quantitative uncertainties of the Project inputs. Expected annual price increases have been estimated as follows:

<u>Calendar Year</u>	<u>Construction, Professional Services, Technical Assistance Staff</u>		<u>All Other Costs</u>	
	<u>Foreign</u>	<u>Local</u>	<u>Foreign</u>	<u>Local</u>
	------(%)-----			
1979	7.5	10	6.5	10
1980 - 85	7	8	6	8

Physical and price contingencies together amount to about 38% of the base costs or 28% of total project costs.

C. Financing

4.44 The project would be financed by a combination of credits, loans and grants of 5 development agencies and Government's own contribution. Total project costs, broken down into categories including all contingencies, would be shared between the development agencies and Government in the following amounts and proportions:

4.45 Under joint financing arrangements, IDA would contribute a credit of US\$8 million, and IFAD a loan of 7 million Special Drawing Rights (about US\$9 million), sharing all disbursements in the ratio of about 8/17 to 9/17. Both contributions would be on respective standard terms to the Government of Somalia who would pass on the proceeds to NRA as a grant under a Subsidiary Agreement. IDA and IFAD would finance the residual project costs which are not covered by either the grants of USAID, ODM and WFP or Government's contribution of US\$6 million for local salaries and allowances. The joint IDA/IFAD financing would consist of 67% foreign exchange and 33% local costs.

4.46 The USAID grant would finance the range and stockwater development components, part of the formal education and training, the range investigations, soil conservation and grazing cooperatives components, Technical Assistance to NRA Headquarters, and the Range Monitoring Unit and Stockwater Service, except for the categories covered by IDA and IFAD. ODM would finance Technical Assistance and specialized equipment for part of the formal training at the Livestock and Range School, the Town Shelter Belts and Nurseries, the Veterinary Services and the Maintenance Service. WFP would provide food for unskilled laborers. Government would gradually take over all local salaries and allowances by year 4 of the project.

4.47 It was agreed during negotiations that a condition of effectiveness of the credit would be that agreements concerning co-financing between Government and each development agency involved, other than IDA, had become effective.

4.48 It was further agreed at negotiations that as a condition of effectiveness of the credit, Government had deposited in NRA's Project account with the Central Bank an advance in the amount of So.Sh. 5 million.

4.49 Assurances were obtained during negotiations that Government would replenish the Project Account (para. 4.48) to a level of So. Sh. 5 million every six months until project completion.

D. Procurement 1/

4.50 Procurement under the joint IDA - Credit and IFAD-Loan would follow World Bank Procurement guidelines. Except for an advance procurement of vehicles, equipment and furniture (US\$0.25 million) needed during the first project year and where international or local shopping would be used, procurement of vehicles, equipment and furniture would be subject to International Competitive Bidding (ICB). Tenders would be bulked to the maximum extent possible in order to attract major international and/or local contractors and suppliers. During bid evaluation, goods manufactured in Somalia may be granted a margin of preference of 15% of the c.i.f. bid price or the amount of customs duties and other import taxes (whichever is lower) over imported foreign goods. ICB for vehicles, equipment and furniture would total an estimated US\$1.9 million or about 11% of the joint IDA/IFAD financing. It was agreed during negotiations that NRA would enter into agreements with one

1/ Amounts expressed without contingencies.

or more procurement agencies acceptable to IDA, for the procurement of vehicles, equipment and supplies. Internationally recruited staff (US\$1.7 million) would be acceptable to IDA (para 5.25).

4.51 The construction program (US\$4.5 million) would also be subject to ICB. Under this procedure, domestic contractors may be granted a 7.5% margin of preference in bid evaluation.

4.52 USAID, ODM and WFP would follow their own procurement guidelines.

E. Disbursement

4.53 An advance under the IDA Project Preparation Facility (PPF) was approved on June 18, 1978 in the amount of US\$300,000 to finance professional services for the CRDP Resource Inventory (US\$15,000 for Landsat Imagery and US\$205,000 for the Inventory), and fellowship training (US\$80,000). As of March 14, 1979, US\$74,250 had been disbursed under the PPF.

4.54 The IDA - Credit and the IFAD - Loan would be administered by IDA. Disbursements against project expenditure would be shared between IDA and IFAD in the ratio of about 8/17 to 9/17 on the basis of the following category costs:

Category	IDA	IFAD	Disbursement
Cost	Share	Share	Against
-----US\$ Million-----			
(a) Refunding of Project Preparation Facility			100% of expenditure.
(b) Construction			100% of expenditure, excluding pump houses and wateryards
(c) Vehicles			100% of expenditure, excluding vehicles and machinery financed by USAID and ODM
(d) Equipment & Furniture			100% of expenditure, excluding equipment financed by USAID and ODM
(e) Professional Services, Internationally re-cruited staff and fellowships			100% of expenditure, excluding services, staff and fellowships financed by USAID and ODM
(f) Local Salaries & Allowances			100% of expenditure, excluding cash wages for WFP workers
(g) Vehicles and Machinery Operating Costs, Maintenance, Utilities & Miscellaneous Operating Costs			100% of expenditure, excluding parts financed by USAID, ODM and WFP.
(h) Unallocated			
Total			

4.55 Disbursements against (a), (b), (c), (d) and (e) of para 4.54 would, in order to simplify accounting, be made against 100% of expenditures, which would be fully documented. Disbursements against (f) and (g) would be made against statements of expenditure, certified by the General Manager of NRA and the Project Coordinator, for which documentation would not be submitted to IDA but retained by NRA and made available for inspection to IDA supervision missions. The unallocated amount (h) represents the contingencies on the categories (b) to (g) and would be transferable to these categories as required. An estimated disbursement schedule is at Annex 1, Table 1.

F. Accounts, Audit and Reporting

4.56 The General Manager of the NRA, supported by the internationally recruited Financial Controller, would be responsible for all procurement procedures, withdrawal applications for the IDA-Credit and IFAD-Loan and accounting under the Project. The NRA would open a Project account at the Central Bank through which all foreign and local funds for the Project would be channelled. Government would advance funds for this account and replenish it every six months (paras. 4.48 and 4.49). The Veterinary Service, the Afgoi Livestock and Range School and the Faculty of Agriculture would direct requests for their share of Project funds to the General Manager of NRA, would keep separate accounts and submit these to NRA for consolidation and the preparation of withdrawal applications under the IDA-Credit and the IFAD-Loan. Assurances were obtained at negotiations that the above withdrawal and accounting procedures would be followed.

4.57 All government institutions are required to have their accounts audited by the Magistrate of Accounts. His Department, which would be strengthened under the IDA Technical Assistance Credit, would assume responsibility for the annual auditing of the Project account within NRA. Assurances were obtained at negotiations that the NRA would submit accounts for all Project expenditure, together with audited accounts for NRA, to IDA within six months of the end of each fiscal year.

4.58 The NRA would have the responsibility of preparing semi-annual reports on the progress of all project components and submitting them to all financing agencies. Assurances were obtained at negotiations that Government would, promptly after completion of the Project, but no later than six months after the credit closing date, submit to IDA a completion report on the execution of the Project, its costs and benefits, and its major accomplishments. This report would be prepared for Government by the General Manager of NRA and the Project Coordinator.

V. ORGANIZATION AND MANAGEMENT

5.01 The NRA would be the executing agency for the Project with the exceptions of: (i) the Veterinary Services component which would be executed by the Veterinary Department of MLFR; (ii) the formal training at the Livestock and Range School which would be the responsibility of the Project Management Unit of MOE; and (iii) the training in range management at the Faculty of Agriculture which would be the responsibility of that faculty. Procurement and accounting for all Project expenditure would be handled by NRA (para. 4.56).

5.02 The obligations of NRA as executing agency would be formalized in a Subsidiary Agreement between Government and NRA and it was agreed during negotiations that the ratification of this Subsidiary Agreement would be a condition of effectiveness of the credit.

A. The National Range Agency (NRA)

5.03 The NRA is headed by a General Manager who reports directly to the Minister, MLFR. The General Manager, with the approval of the Minister, issues internal rules governing NRA, concludes contracts on behalf of NRA and is responsible for financial accounts and management of funds. NRA headquarters is divided into five functional departments, each headed by a Director, namely: general administration; range and environment; research, training and planning; forestry; and wildlife. In the field, NRA has sixteen regional field offices each under a regional director responsible for coordination with local authorities and other government agencies. In regions where development projects are being implemented, technical management under his supervision is carried out by the regional range officer with an assistant who supervises district range assistants in charge of range activities in each district. A chart of the present NRA organization is at Annex 2, Chart 1.

5.04 Legislation. The NRA was established by Law No. 23, 1976, Law No. 15 of October 26, 1969, on Fauna (Hunting) and Forest Conservation, and Law No. 68 of October 20, 1970, on Forestry, Range and Wildlife. A new Law No. 3 of 1979 for the development of range management has been signed but not yet gazetted. This law authorizes the Secretary of State, MLFR, on the recommendation of the General Manager of NRA to establish range development and conservation areas and gives NRA the authority to: (i) open and close grazing reserves; (ii) establish grazing associations; (iii) control development and use of stock water supplies in the rangelands; (iv) undertake search, seizure and arrest for offenses; and (v) establish a Range Fund to finance range development activities. The law further authorizes the President of the Republic to issue decrees concerning its implementation.

5.05 It was agreed during negotiations that as a condition of credit effectiveness, the Law No. 3 of 1979 for the development of range management had been enacted and gazetted.

5.06 Responsibilities for Project Implementation. The General Manager of NRA would be Project Manager assisted by an internationally recruited Project Coordinator who would supervise and coordinate the implementation of all Project components by working through the responsible departments which would be strengthened by internationally recruited specialists. A list of the specialist posts and the duration of service is at para. 5.22.

5.07 NRA Field Organization. Three regional range directors would be responsible to the General Manager of the NRA for the administration and management of the rangelands in the Project area and would coordinate Project activities with other Government agencies concerned with rangeland development. Under their direction, three regional range officers would supervise the activities of the district range assistants and be responsible for the establishment and management of the range reserves and town shelter belts, the supervision of the watering points and the maintenance of the dialogue with the pastoralists. They would cooperate closely with the teams conducting the

aerial and ground surveys, as well as the range investigations and community surveys. The district range assistants would be responsible for overseeing the management of the reserves in their district, for supervising grazing associations and range guards, and keeping records of the number of livestock and people using the reserves. They would liaise with the district range educators in establishing and maintaining communication between the pastoralists and the administration. With time, it is expected that all three range assistants at each district office would have the combined function of range management assistant, animal husbandry adviser and range educator.

5.08 Headquarters Support. The Department of Administration of NRA would be responsible for administrative support for the Project, for procurement, property control and personnel matters. The transport section would be responsible for vehicle control and maintenance to be carried out in one central and three regional workshops. A section for receivables would be established to deal with payments to NRA, initially water charges from stock water points arising out of the operation of the stock water service (para. 5.09).

5.09 The Department of Range and Environment would consist of three services: soil and water conservation; range management and extension; and stock water. The soil and water conservation service would be responsible for the implementation of the soil and water part of the range studies and trials component including the experimental grazing cooperatives. The range management and extension service would be responsible for the range resource inventories, the range ground survey, establishment and operation of town and village, range grazing, and famine reserves as well as for range monitoring. A new Stock Water Service would be established, responsible for siting and establishment of stock water supplies in the reserves selected by the range ground survey team, as well as for the drilling and establishment of ten stock water points in the NRDP area. This service would also be responsible for maintenance and operation of these boreholes and other stock water points under the management of NRA, including the collection of water charges.

5.10 The Department of Research, Training and Planning would consist of the three named services. The research service would be responsible for the range investigations sub-component including taxonomy and forage analysis. The training service would be responsible for the implementation of the non-formal training component. In this it would cooperate closely with the National Adult Education Center and the Academy for Somali Studies from which a Pastoral Training Adviser would be seconded. The planning service would have as its initial task the monitoring and evaluation of the Project (para. 5.11).

5.11 A Monitoring and Evaluation Unit would be established under the planning service of the Research, Training and Planning Department of NRA. The unit would initially be staffed by one professional staff. The International Livestock Center for Africa (ILCA) has agreed to provide training for this professional within its ongoing monitoring and evaluation program and to provide the necessary technical assistance for the establishment of a

monitoring package, with particular reference to establishing an appropriate methodology. This level of involvement would be funded from ILCA's core budget whereas the Project would provide the locally recruited professional and transport. It is visualized that the unit would serve as a data gathering center initially for the establishment of a baseline in monitoring. When a national monitoring team would be established under the State Planning Commission the unit would pass on information to this team at which time it would serve as a tool both of management's monitoring of project implementation and Government's monitoring of the impact of the Project on the lives of pastoralists as well as livestock and the environment in the project area.

5.12 The Department of Forestry would consist of two services: forest utilization and forest plantation. The latter service would be responsible for the nurseries to be established under the range studies and trials component which would provide seedlings for the town shelter belts and for sand dunes stabilization.

B. Formal Training

5.13 The Project Management Unit of MOE would be responsible for the implementation of formal training at the Livestock and Range School which would be part of the Afgoi Secondary Agricultural Training Complex. The Dean of the School would be responsible to the Project Implementation Unit of the Ministry of Education and would be in charge of the day-to-day management of the complex. A Board would be formed by representatives of the concerned agencies (MLFR, NRA, MOE, and MOA) which would decide on the budget, curriculum and numbers of students in the various disciplines.

5.14 Degree level training in range management and post graduate fellowship training would be executed by the Faculty of Agriculture of the National University of Somalia in consultation with NRA.

C. Veterinary Services

5.15 The Department of Veterinary Services of MLFR would be responsible for implementation of that project component. The technical director, at present provided under NRDP, would be financed under the Project for four additional years and be responsible to the Director of Veterinary Services for supervising implementation. The Project Coordinator CRDP would, through the Director, coordinate field activities with those of NRA in order to achieve maximum impact.

D. Regulation of Grazing Reserves

5.16 Grazing associations would be established by NRA in consultation with local government authorities. Grazing guards would be selected from among the membership of the association and initially be employed by NRA under the food for work program (para. 4.15). They would, under the supervision of district range assistants, police the grazing reserves and assure that closed reserves would not be grazed and that the open reserves were only used by the members of the association. If they were unable to persuade pastoralists to leave a closed reserve, they would report through the range assistants, to the local police authority who would then be responsible for removing the offenders and for impounding animals or imposing fines according to the law.

E. Annual Work Program

5.17 A detailed annual work program for Project implementation would be prepared by NRA in conjunction with the preparation of the annual budget. The annual work program together with relevant parts of the NRA budget and the Project progress reports would be reviewed by NRA senior staff and IDA during supervision and would be finalized by the end of each calendar year.

5.18 The review would ensure that: (i) necessary provisions for Project implementation were included in the NRA budget; (ii) the necessary staff to implement the various activities were in place or being recruited; (iii) the program complied with legal covenants of the Project; and (iv) required adjustments and changes to the implementation schedule were made.

5.19 Assurances were obtained during negotiations that an annual work program and budget would be furnished to IDA for review by November 15 each year, starting in 1979 until 1984.

F. Technical Assistance Staff

5.20 The capacity of NRA to execute Projects is severely hampered by the lack of qualified Somali staff, both administrative and technical, which necessitates the substantial support of internationally recruited specialists.

5.21 In all, the Project would provide 100 man-years of internationally recruited staff. They would be distributed over 30 posts at various stages of Project implementation as set out below and in Annex 1, Chart 3:

<u>No.</u>	<u>Position</u>	<u>Man-Years</u>	<u>Starting Proj. Yr.</u>
<u>Range Development</u>			
1.	Range Ecologist 1 (Range Survey)	1.5	1
2.	Range Ecologist 2 (Range Survey)	1.5	1
3.	Range Ecologist 1 (Range Monitoring Unit)	2.0	3
4.	Range Ecologist 2 (Range Monitoring Unit)	2.0	3
<u>Training</u>			
5.	Range Training Officer	5.0	1
6.	Adult Education Officer	4.0	3
7.	Lecturer 1 (Range Management)	4.0	3
8.	Lecturer 2 (Range Management)	4.0	3
9.	Lecturer 3 (Animal Husbandry)	4.0	3
10.	Lecturer 4 (Forestry)	4.0	3
11.	Range Instructor, Faculty of Agriculture	5.5	1
<u>Range Studies and Trials</u>			
12.	Range Ecologist (Range Investigations)	2.5	4
13.	Senior Range Technician (Range Investigations)	2.5	4
14.	Taxonomist	3.5	3
15.	Nursery Specialist	4.0	3
16.	Soil and Water Conservation Expert	2.0	3
17.	Cooperative Adviser	2.0	5
<u>Veterinary Services</u>			
18.	Technical Director, Veterinary Services	4.0	3
19.	Disease Investigation Officer	4.0	3
20.	Senior Pathologist	4.0	3
21.	Laboratory Technician	4.0	3
<u>NRA Headquarters</u>			
22.	Project Coordinator, CRDP	5.5	1
23.	Technical Director, Range & Environment	3.0	3
24.	Technical Director, Forestry	4.0	3
25.	Technical Director, Administration	4.0	1
26.	Financial Controller	3.0	3
27.	Technical Director, Water Service	2.0	5
28.	Hydrogeologist	2.0	3
29.	Drilling Foreman	2.5	3
30.	Master Mechanic	4.0	3
Total		100.0	

5.22 The four technical directors of NRA would be technically responsible to the General Manager for the day-to-day running of the departments and for the training of the Somali directors of the departments who would take full responsibility when this was recommended to the General Manager by the technical directors.

5.23 Prior to negotiations commitments regarding the provision of the internationally recruited staff were obtained as set out below:

	<u>Posts in all</u>	<u>Source</u>
Posts No. 1-4, 7-8, 11-14, 16, 17, 23, 27-29	16	USAID
Posts No. 9-10, 15, 18-21, 24, 30	9	ODM
Posts No. 5-6, 22, 25, 26	5	IDA/IFAD

5.24 At negotiations assurances were obtained from Government that the General Manager as well as the Directors of the Administration, and Range and Environment Departments of NRA would be appointed in consultation with IDA.

5.25 The Government has further assured that international technical assistance staff would possess experience and qualifications acceptable to IDA.

5.26 During negotiations, agreements were reached that the appointment of the internationally recruited Project Coordinator would be a condition of effectiveness of the credit.

G. Construction

5.27 The total construction program of the Project would be implemented by NRA. NRA would employ an internationally recruited consultant Architect/Planner who would, together with a local Civil Engineer already in post, initiate and supervise the appointment of executive architects, site selection, site surveys, preparation and evaluation of tenders, and advise NRA on the implementation procedures. Buildings would be designed, tendered and supervised by the Somali Engineering Consulting Agency, a Government organization responsible for all architect and engineering services to Government.

5.28 All construction, except of the pumphouses, wateryards, access tracks and demarcation of grazing reserves which would be established by NRA on a force account basis, would be subject to ICB. In case that for parts or all of the building construction program reasonable bids would not be received, NRA would, in coordination with the Ministry of Works, proceed on a force account basis. Construction of staff houses would be given priority since they are the key to the timely start of Technical Assistance. A schedule of construction is in Annex 1, Chart 2.

VI. PRODUCTION, MARKETS, PRICES, COST RECOVERY AND GOVERNMENT CASH FLOW

A. Production

Introduction

6.01 The Project derives its production benefits from increased livestock off-take. The establishment of range reserves would increase the forage resource and allow for more animals to be grazed, and improved veterinary services would result in higher off-take rates by reducing mortalities and increasing fertility. Production benefits would also take the form of increased milk and meat consumption but due to lack of data, no attempt has been made to estimate incremental quantities and value of these products. Incremental livestock production has therefore been expressed entirely as higher sales of live animals to local or export markets.

6.02 Separate values for the production increase derived from range management and that from improved veterinary services have been obtained by using constant off-take parameters for range management and by measuring the impact of veterinary services in terms of increased off-take rates.

Incremental Production from Range Management and Water Development

6.03 Improved forage production and utilization in the range reserves through management and stock water development would result in an increase of the carrying capacity at full development by about 70,000 grazing livestock units (GLU) ^{1/}, - or 5% - as follows:

<u>Reserve Type</u>	<u>Sheep and Goats</u> -----thousand	<u>Cattle</u> head-----	<u>Camels</u> -----	<u>Total Incremental</u> GLU '000
Village and Town	422	41	23	68
Range Grazing	488	--	37	60
Famine ^{2/}	(209)	(36)	(40)	(58)
Total	701	5	20	70

6.04 The incremental annual off-take resulting from this increase in carrying capacity -- assuming constant (1975) off-take rates -- would be:

^{1/} GLU is an expression of the grazing pressure exerted by one LU adjusted for age and weight and according to grazing habits. It is used to express the fact that camels only take 60% of their forage in competition with the other species.

^{2/} The negative figures indicate the production foregone, since a famine reserve could alternatively produce the same benefits as a range grazing reserve.

	<u>Sheep and Goats</u>	<u>Cattle</u>	<u>Camels</u>
	-----thousand	head-----	
Incremental Herd	701	5	20
Annual Off-take Rate (%) <u>1/</u>	11.2%	3.74%	3.0%
Annual Off-take from incremental herd	78.5	0.2	0.6

Incremental Production Resulting from Improved Veterinary Services

6.05 Improved veterinary services would not only benefit the animals grazed in the new reserves but the entire livestock population of the Project area, for which the incremental coverage with repeated treatment has been calculated at 30%. Herd model calculations show that improved productivity and reduced mortality as a result of veterinary treatment would allow an increase in off-take rates of 2.06% for sheep and goats, 1.4% for cattle and 0.6% for camels. At full development, the annual animal production in the Project area would therefore increase by 8% as follows:

	<u>Sheep and Goats</u>	<u>Cattle</u>	<u>Camels</u>
	-----thousand	head-----	
Incremental livestock under treatment	1,800	269	303
Incremental Annual Off-take rate (%) <u>1/</u>	2.06%	1.40%	0.60%
Incremental Annual Off-take	37.1	3.8	1.8

Total Incremental Production

6.06 At full development the total annual incremental off-take generated by the Project would be:

	<u>Sheep and Goats</u>	<u>Cattle</u>	<u>Camels</u>
	-----thousand	head-----	
Range Management	78.5	0.2	0.6
Veterinary Services	<u>37.1</u>	<u>3.8</u>	<u>1.8</u>
	115.6	4.0	2.4

This would represent a weighted average increase of livestock produced by 15% over the level before the Project.

6.07 Incremental production has been assumed from Project year 6. In the case of the range grazing reserves, where the grazing period is extended by four months as soon as stock water points become operational, the full benefit of the added grazing has been credited from Project year 6, whereas production increase from other reserves has been built up gradually over 10 years. The incremental repetitive cover in the veterinary treatment and the incremental off-take rates have been assumed to take place over a period of 5 years for sheep and goats and 7 years for cattle and camels.

1/ As developed through herd model calculations.

B. Markets and Prices

Markets

6.08 Somalia has an established traditional livestock marketing system. Most towns or villages have a market place where buyers (traders, butchers) and sellers (pastoralists, farmers) gather regularly. The municipalities levy a head tax on animals brought to the market. Sales are generally carried out through middlemen or brokers who get a 3% commission from the buyer. In remote areas, traders use trucks or camels to reach the pastoralists, and often barter with consumer goods which they carry. Breeding stock are traded informally and independently of the market place, and are generally bartered in exchange for other stock. All livestock is traded on a per head basis and not according to quality and weight.

6.09 Most of the animal off-take of the Project area is consumed locally. The remainder is sold for export or for consumption in Muqdisho. Prime male sheep and goats, and a small number of camels and cattle are exported to Near East markets, especially to Saudi Arabia. Total meat consumption in the Near East is projected to grow at 6% p.a., between 1969/71 and 1985. Lamb and mutton would remain the most popular meat and the demand is expected to grow at 6.7% annually. ^{1/} The domestic demand would also grow, but much slower than the export potential. Rising prices would make the domestic demand follow a rate somewhat below the population growth figure, which is estimated at 2.6% p.a.

6.10 The existing livestock marketing system is not able to fully respond to the favorable market prospects. It does not transform market demand into price incentives in an adequate manner. No grading system exists and consequently no quality standards are established upon which traders, butchers and foreign dealers can rely. Transport of livestock on the hoof over long distances is costly and involves weight losses and mortality. Shipping service from the export ports is costly and erratic. Finally, the export of animals is hampered by a variety of institutions issuing permits, and licenses and charging the exporter with service and non-service related fees and taxes amounting to about 14 - 18% of the f.o.b. value. Export traders, in turn, try to evade currency exchange regulations and registration. Marketing development is expected to be addressed by a national livestock marketing project which is currently being prepared.

Prices

6.11 Strong demand has resulted in rising prices for Somali livestock. In 1976 and 1977, f.o.b. prices for sheep and goats increased by about 50% and for cattle and camels by 25 - 30% in real terms. Prices are cyclical, being influenced by drought years when pastoralists are forced to sell animals, followed by periods of maximum retention of breeding animals for herd re-building.

^{1/} FAO/World Bank: The Outlook for Meat Production and Trade in the Near East and East Africa, December, 1977.

C. Income of Pastoralists

6.12 The average per capita income of all pastoralists from animal sales and consumption would, in line with the incremental off-take, increase by about 15% from US\$83 in year 5 to about US\$98 in year 15 of the project (in constant 1979 US\$ and 1985 prices). The expected real price increase for livestock beyond 1985 has been neglected, since the producers would have to face slightly higher production costs resulting from water charges and increased use of veterinary drugs.

6.13 In addition, the income of the pastoralists would be more stable than without the Project. In drought years, the famine grazing reserves would save from starvation not only the incremental animal population built up under the Project, but also about 5% of the already existing herds. This would lead to a reduction in herd losses and market and price fluctuations caused by droughts; and the retention of animals thereafter would be less pronounced.

D. Cost Recovery and Government Cash Flow

6.14 The Project would create some Government revenue, though not sufficient to cover all recurrent costs of the Project. NRA would collect water charges from stock water points. Rates would be consistent with those charged by WDA and the municipalities and would allow the NRA to recover administration, maintenance and operation costs for the water service. At full development of the Project, these revenues of NRA would amount to about 24% of the financial recurrent costs of the project. In addition, the veterinary service would recover about 14% of its financial recurrent Project cost through the sale of drugs. Non-service related export and transit charges which are levied by the veterinary service, the municipalities, the Ministry of Finance, the Port Authority and the Chamber of Commerce in the form of taxes, customs and permit fees are projected for 1979 to amount to about So.Sh. 28 per sheep or goat. Assuming that 50% of the incremental Project off-take of sheep and goats is exported, annual revenues would be created in the amount of So.Sh. 1.6 million (US\$250,000) at full development. With the existing revenue system and charge levels, the total recovery rate for the financial recurrent Project costs would be only about one-third. At full development, two-thirds of the recurrent financing for the Project or about 10 So.Sh. million would thus have to be provided from other Government income.

6.15 At present a higher level of cost recovery from pastoralists, such as taxation of livestock or grazing fees, would not be feasible considering their low income. Additional export taxation may adversely effect this desirable trade. More efficient collection as well as taxation of presently untaxed profits could, however, increase Government revenues substantially. This points to the need for a more efficient national livestock marketing system.

6.16 For some years to come, Government would have to subsidize range development. In the context of the Somali economy, and considering that only 60% of Project costs produce direct benefits (para. 7.03), 33% recovery of total Project costs is acceptable. Nevertheless, the livestock industry should, in due course, be able to carry a larger share of development costs. It was therefore agreed at negotiations that Government would prepare and submit to IDA for discussion, no later than December 31, 1983, proposals for ways of increasing cost recovery in the livestock industry. Terms of reference for this study would be worked out in consultation with IDA. Government would also consult IDA at various stages of preparation of the study.

VII. BENEFITS AND JUSTIFICATION

A. Quantifiable Benefits

7.01 The Project would produce quantifiable benefits in the form of increased livestock off-take based on the improved carrying capacity of the rangelands and reduction in animal losses from droughts and disease. The economic benefits resulting from the range management components of the Project would consist of the incremental off-take from the village, town, famine and range grazing reserves and the value of the incremental herd at year 30. Economic benefits of the veterinary component have been calculated from the incremental off-take rates resulting from increased disease prevention.

B. Economic Rate of Return (ERR) (Paras. 6.03 - 6.07)

7.02 The incremental livestock production would be exportable but the growing internal demand and the closeness of the Project area to urban consumer markets is expected to attract an increasing number of animals. Foreign exchange would be earned mainly by the export of male sheep and goats to markets in the Near East. All animals, except those saved by the famine reserves (which, had they died, would still have had a certain residual value), have been valued at export parity prices. These prices have been determined by applying the beef price projections to actual f.o.b. prices of live animal exports. Service related domestic marketing costs from the Project area to the port of Berbera have been excluded, but all non-service related direct fees, charges, customs and duties have been included. To reflect the scarcity value of foreign exchange, export earnings have been shadow priced at the rate of US\$1= So.Sh. 9, or about 43% above the official exchange rate.

7.03 The costs of the Project components grouped under range studies and trials, education and training have been omitted and the costs of the strengthening of the veterinary service and the NRA headquarters support have been included only to the extent they contribute to the quantified Project benefits. The exclusions amount to about 40% of Project costs. A shadow wage rate, estimated at 50% of the financial costs, has been used for the evaluation of the food rations for unskilled labour under the Food for Work Program and foreign exchange costs have been shadow-priced as shown in para. 7.02.

7.04 The Project, would, under the above assumptions and over 30 years, have an overall economic rate of return of 15%. The rate of return of the veterinary service component would be 28%, a relatively high figure explained by the sunk costs of the existing infrastructure and staff. The range management component alone would have a lower ERR of 12% as a result of the heavy initial investments required for infrastructure and institution building.

C. Risks and Sensitivity Analysis

7.05 A major risk in Project implementation would be a slower than expected acceptance by the pastoralists of Project interventions resulting in their withholding cooperation. Similarly, the Project might be slowed down by delays in recruitment of staff.

7.06 Stock water development in ecologically fragile areas without the recurrent enforcement of range management practice would lead to overgrazing and serious deterioration of rangeland productivity in which case the Project would compound the problems which it is designed to solve.

7.07 If the risks mentioned in para. 7.05 above were to have the effect of delaying benefits by two years, the ERR would drop to 12%. If the delay was five years, the ERR would be 9%. If costs increased by 20%, the ERR would be 13%.

7.08 If stock water development were inadequately managed, resulting in an overall decline in rangeland carrying capacity of 30%, the ERR would drop to 10%.

7.09 The quality of rangelands in Somalia is declining but the rate of decline is not established. Estimates which have gone as high as 3% annually, were not included in the economic analysis. If, however, an annual decline in carrying capacity of only 1% p.a. (compounded) were calculated for the Project from year 6 to 30, and applied to the conventional total off-take and the residual herd in year 30, the overall ERR of the Project would increase by one-third to about 20%.

7.10 If all shadow pricing were removed, the overall ERR of the Project would be reduced to about 12%.

7.11 In order to enhance the participation of pastoralists and their acceptance of restrictions on grazing, a strong non-formal training component has been incorporated into the Project. Establishment of reserves and stock water development has been made contingent on the formation of grazing associations and the declared willingness of the pastoralists to cooperate. In order to safeguard against ecological deterioration in connection with stock water development, assurances were obtained at negotiations that no stock water supplies would be developed unless they were incorporated in a range grazing reserve for which a grazing association had been formed which had agreed to abide by any restrictions on grazing and water imposed by the NRA in accordance with the law.

D. Non-quantifiable Benefits

7.12 The Project would create a number of non-quantifiable benefits:

- (i) The subsistence of the pastoralists would be improved since larger and healthier herds would allow higher consumption of milk and meat, and their income and subsistence would be less vulnerable to droughts after the introduction of famine grazing reserves, which would gradually relieve Government of periodically undertaking relief and resettlement operations.
- (ii) Additional employment would be created in NRA for about 834 people and in the veterinary field service for 80 people. The Project would also create employment for a total of 4,700 man-years of unskilled labor in Project related works.
- (iii) The Project would have beneficial environmental effects by arresting the ecological decline of the rangelands. Town shelter belts at the provincial capitals would provide shelter and firewood. Nurseries to be established under the Project would provide seedlings for these shelter belts and for sand dune fixation.
- (iv) The Project would start the collection and evaluation of data by means of range investigations, soil conservation, water spreading and experimental grazing cooperatives. The results of these studies and trials would not only be a feedback for the Project but also lay the foundation for future range research.
- (v) Veterinary diagnostic services and research would be strengthened through the provision of an internationally recruited disease investigation officer, an internationally recruited pathologist and an internationally recruited laboratory technician.
- (vi) Adult education programs, by making range management a priority aim for teaching, would acquire relevance and add a new dimension to pastoralist education.

E. Beneficiaries

7.13 Main beneficiaries of the Project would be the pastoralist population of 400,000 people in the Project area, who would reach a higher level of subsistence. A gradually achieved self-sufficiency in forage and stock water in the Project area would over time lead to shorter distances of migration and eventually bring about a more sedentary way of life and increased access to social and educational services.

VIII. AGREEMENTS REACHED

8.01 During negotiations, assurances from Government were obtained that:

- (i) Government would replenish NRA's Project account with the Central Bank to a level of So.Sh. 5 million every six months until project completion (para. 4.49);
- (ii) NRA would enter into agreements with one or more procurement agencies acceptable to IDA, for the procurement of vehicles, equipment and supplies (para. 4.50);
- (iii) The withdrawal and accounting procedures described in para. 4.56 would be followed (para. 4.56);
- (iv) NRA would submit to IDA accounts for all Project expenditure, together with audited accounts for NRA, within six months of the end of each fiscal year (para. 4.57);
- (v) Government would, promptly after completion of the Project, but no later than six months after the credit closing date, submit a completion report on the execution of the Project, its costs and benefits, and its major accomplishments (para. 4.58);
- (vi) An annual work program would be furnished to IDA for review by November 15 each year, starting in 1979 until 1984 (para. 5.19);
- (vii) The General Manager as well as the Directors of the Administration, and Range and Environment Departments of NRA would be appointed in consultation with IDA (para. 5.24);
- (viii) International technical assistance staff would possess experience and qualifications acceptable to IDA (para. 5.25);
- (ix) Government would prepare and submit to IDA for discussion, no later than December 31, 1983, proposals for ways of increasing cost recovery in the livestock industry; terms of reference for this study would be worked out in consultation with IDA; Government would also consult IDA at various stages of preparation of the study (para. 6.16);
- (x) No stockwater supplies would be developed unless they were incorporated in a range grazing reserve for which a grazing association had been formed which had agreed to abide by any restrictions on grazing and water imposed by the NRA in accordance with the law (para. 7.11).

8.02 Conditions of Credit effectiveness are that:

- (i) Agreements concerning co-financing between Government and each development agency involved, other than IDA, had become effective (para. 4.47);
- (ii) Government had deposited in NRA's Project Account with the Central Bank an advance in the amount of So.Sh. 5 million (para. 4.48);
- (iii) The Subsidiary Agreement between Government and NRA had been ratified (para. 5.02);
- (iv) The Law No. 3 of 1979 for the development of range management had been enacted and gazetted (para. 5.05);
- (v) The internationally recruited Project Coordinator had been appointed (para. 5.26).

8.03 Subject to the above assurances and conditions, the proposed Project is suitable for an IDA Credit of US\$8 million to the Government of the Somali Democratic Republic.

SOMALIA
CENTRAL RANGELANDS DEVELOPMENT PROJECT
PROJECT IMPLEMENTATION SCHEDULE

	Project Preparation Facility				Project Year											
					Year 1			Year 2			Year 3			Year 4		
RANGE DEVELOPMENT																
Procurement																
Resource Inventory																
Range Ground Survey																
Range Reserve Development																
Water Development (Drilling)																
NRA Field Support																
TRAINING																
Procurement																
Non Formal Education & Training																
Range Management (Faculty of Agric.)																
Formal Education Course, Afgoi																
Post Graduate Studies, Range Mgmt.																
RANGE STUDIES & TRIALS																
Procurement																
Northern Rangelands Inventory																
Town Shelter Belts & Nurseries																
Range Investigations																
Soil Conservation, Water Harvesting, Grazing Coops.																
VETERINARY SERVICE																
Procurement																
Field Services Development																
STRENGTHENING OF NRA																
Procurement																
Administration & Management																
Range Monitoring Unit																
Water Service																
Maintenance Service																
Construction*																

January 20, 1979

*For details see Chart 2

World Bank - 19353

SOMALIA

CENTRAL RANGELANDS DEVELOPMENT PROJECT

Estimated Schedule of Disbursements

Joint IDA/IFAD Disbursements	IDA Disbursements ^{1/}	IFAD Disbursements
-----US-\$ '000-----	-----US-\$ '000-----	-----US-\$ '000-----

SOMALIA
CENTRAL RANGELANDS DEVELOPMENT PROJECT
Schedule of Construction

	Year 1				Year 2				Year 3				Year 4				Year 5				Year 6			
Mogadisho																								
Headquarters Building																								
Surveys and Appointment of Architects																								
Design, Tender Documents																								
Bidding and Award																								
Construction																								
Staff Houses Class A																								
Surveys, Design, Tender																								
Bidding and Award																								
Construction																								
Central Workshop																								
Regional and District Centers *)																								
Surveys, Design, Tender																								
Bidding and Award																								
Construction																								
Water Development (Range Reserves)																								

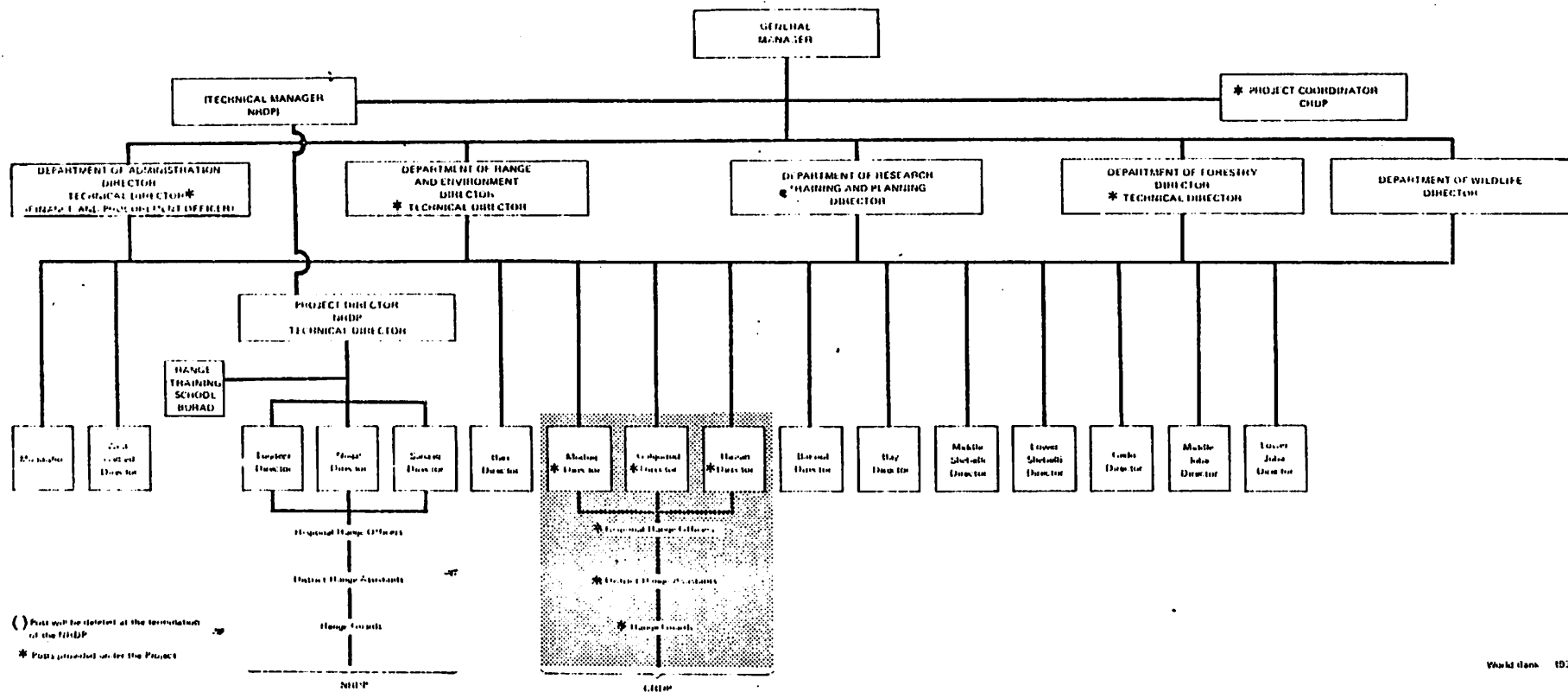
*) NRA Regional Offices, Audiovisual Production Rooms, Stores, Workshops and staff houses (including non-formal training)
 NHA District Offices, Stores, staff houses (including non-formal training component)
 Veterinary Services Diagnostic Laboratory-Hiiraan, Store-Mudug, Extension of Stores in Hiiraan and Galguduud.

World Bank - 19939

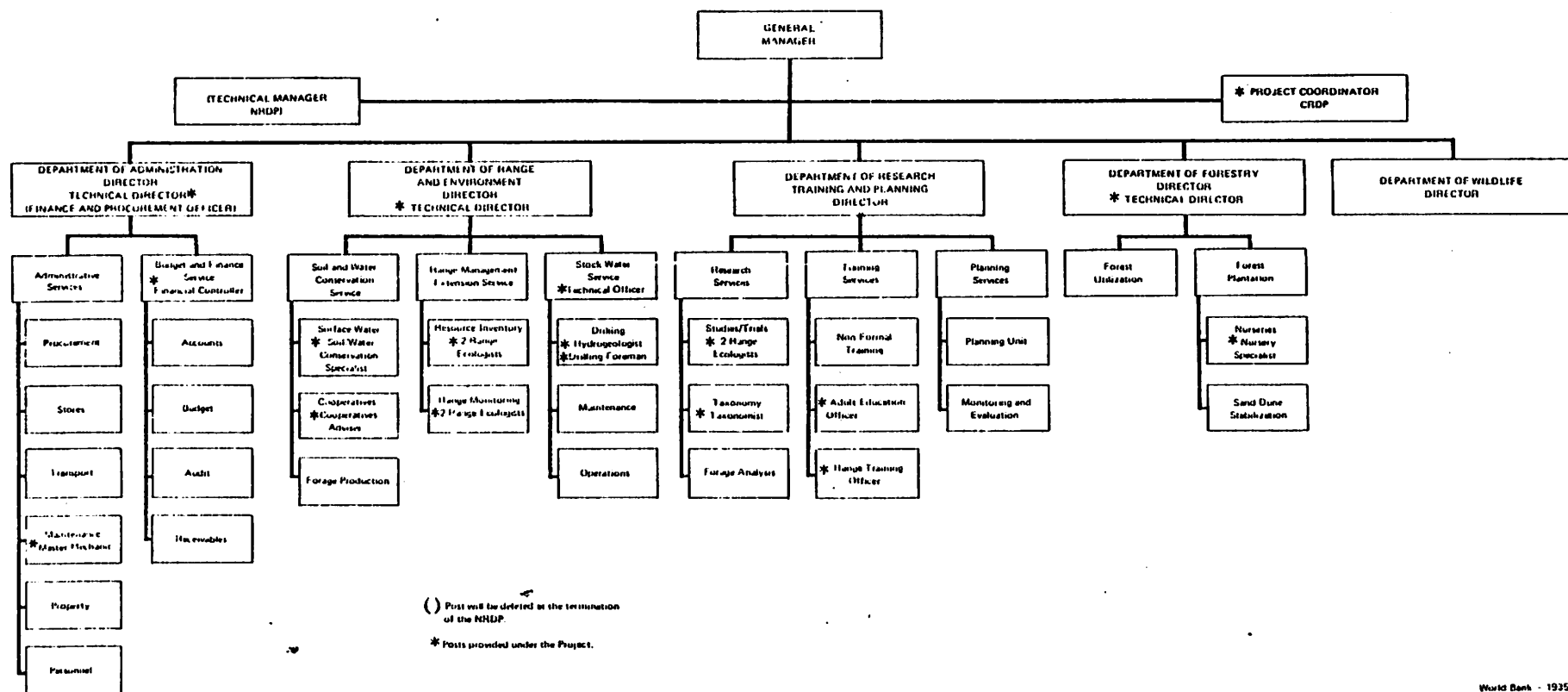
SOMALIA
CENTRAL RANGELANDS DEVELOPMENT PROJECT
Employment of Internationally Recruited Staff

No	Post	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Manyears
1	Range Ecologist 1 (Range Survey)	---	---					1.5
2	Range Ecologist 2 (Range Survey)	---	---					1.5
3	Range Ecologist 1 (Monitoring Unit)			---	---		---	2.0
4	Range Ecologist 2 (Monitoring Unit)			---	---		---	2.0
5	Range Training Officer	---	---	---	---	---	---	5.0
6	Adult Education Officer			---	---	---	---	4.0
7	Lecturer 1 (Range Management)			---	---	---	---	4.0
8	Lecturer 2 (Range Management)			---	---	---	---	4.0
9	Lecturer 3 (Animal Husbandry)			---	---	---	---	4.0
10	Lecturer 4 (Forestry)			---	---	---	---	4.0
11	Range Instructor, Faculty of Agriculture	---	---	---	---	---	---	5.5
12	Range Ecologist (Range Investigations)				---	---	---	2.5
13	Senior Range Technician (Range Investigation)				---	---	---	2.5
14	Taxonomist			---	---	---	---	3.5
15	Nursery Specialist			---	---	---	---	4.0
16	Soil and Water Conservation Specialist			---	---	---	---	2.0
17	Cooperative Adviser			---	---	---	---	2.0
18	Technical Director, Veterinary Services			---	---	---	---	4.0
19	Disease Investigation Officer			---	---	---	---	4.0
20	Pathologist			---	---	---	---	4.0
21	Laboratory Technician			---	---	---	---	4.0
22	Project Coordinator, CRDP	---	---	---	---	---	---	5.5
23	Technical Director, Range and Environment			---	---	---	---	3.0
24	Technical Director, Forestry			---	---	---	---	4.0
25	Technical Director, Administration	---	---	---	---	---	---	4.0
26	Financial Controller			---	---	---	---	3.0
27	Technical Director, Stockwater Service			---	---	---	---	2.0
28	Hydrogeologist			---	---	---	---	2.0
29	Drilling Foreman			---	---	---	---	2.5
30	Master Mechanic			---	---	---	---	4.0

**SOMALIA
CENTRAL RANGELANDS DEVELOPMENT PROJECT
NATIONAL RANGE AGENCY
ORGANIZATION CHART**



SOMALIA
CENTRAL RANGELANDS DEVELOPMENT PROJECT
NATIONAL RANGE AGENCY
HEADQUARTERS ORGANIZATIONAL CHART



SOMALIA

CENTRAL RANGELANDS DEVELOPMENT PROJECT

A. Selected Documents and Data Available in the Project File

1. Government of Somalia: Report in Support of Loan Application to Finance a Central Rangelands Development Project - October 1977.
2. Mass Education: Issues and Proposal, UNESCO - November 1977.
3. Mineral and Ground Water Survey (Phase II). Technical Report No. 3 - Groundwater in the Somali Democratic Republic.
4. Pilot Sample Census on Nomads and their Livestock in Haga Season in Mudug Region - 1971.
5. Request for the Expansion of Somalia 719: "Reforestation and Rangeland Development". World Food Programme.
6. Techniques for Measuring Range Quality Yield and Utilization, Department of Pasture Science, University of the Orange Free State, 1974.
7. Proceedings of the Linean Society of London, Volume 177 - Part 2 Henning C.F., F.L.S. The Vegetation of the Northern Region of the Somali Republic.
8. Photocopy: Survey of the Northern Rangeland Somali Democratic Republic: An Ecological Classification of the Vegetation of the Bosaso Region (FAO, Rome 1973) by C.F. Henning.
9. Somali Democratic Republic: Law for Development of Range Management (Draft January 1, 1978);
10. A Monitoring System for the Rangeland Development Project Ethiopia, ILCA, May 1976.
11. Rangeland Conservation and Development Somalia. Project Findings and Recommendations (SOM 72/003) Terminal Report, FAO, Rome 1977.
12. World Food Programme: Somalia 719 - Reforestation and Rangeland Development Project Document, Rome, October 1972.
13. Training School for Animal Health Assistants, Muqdisho, Somalia. Project SOM 72/002. Final Report of Lecturer in Animal Husbandry (L.R.N. Strange). FAO.
14. Water Analysis carried out by Preparation Team, Somalia Central Rangeland, 1977.

B. Table of Contents of the Implementation Volume

Annex 4: INTERNATIONALLY RECRUITED STAFF

Annex 5: RANGELAND DEVELOPMENT

Annex 6: LIVESTOCK WATER SUPPLIES

Annex 7: NON-FORMAL EDUCATION AND TRAINING

Annex 8: FORMAL EDUCATION IN LIVESTOCK, FORESTRY AND RANGE

Annex 9: RANGE STUDIES AND TRIALS

Annex 10: WORLD FOOD PROGRAM PROJECT 719

Annex 11: PASTORAL ECONOMY AND LIVESTOCK MARKETING

Annex 12: LIVESTOCK PRODUCTION AND THE STRENGTHENING
OF THE VETERINARY SERVICES

Annex 13: PRODUCTION AND BENEFITS

Annex 14: DETAILED PROJECT COSTS

Annex 15: PROJECT FINANCING

Annex 16: CONSTRUCTION

